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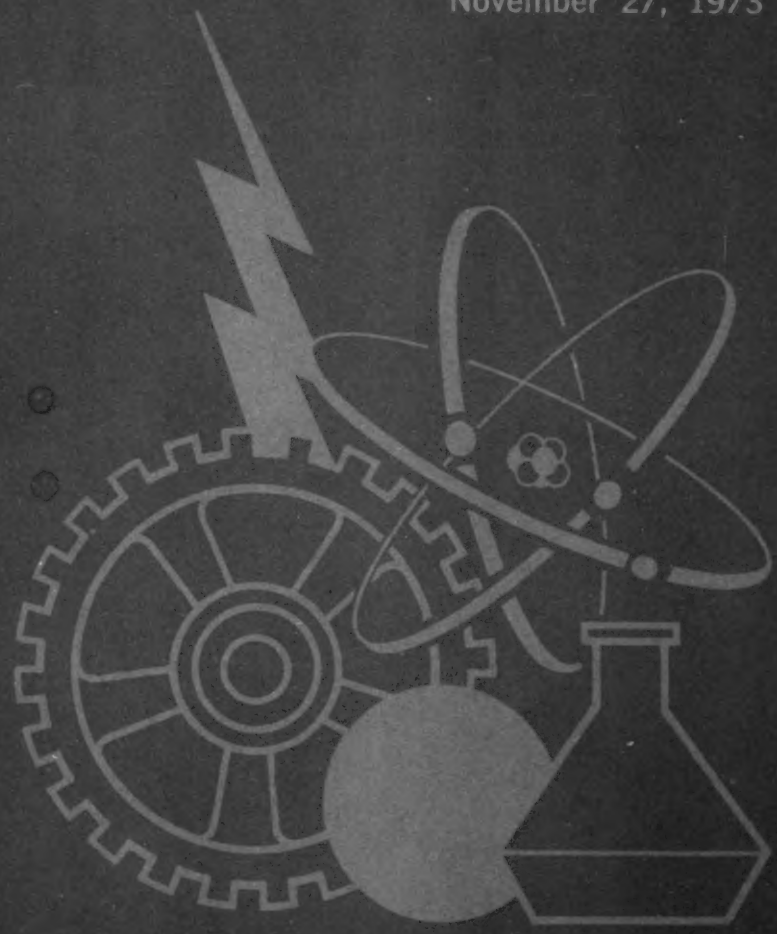

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PATENT NOTICES

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,444,443, H. Moroshima, SEMICONDUCTOR DEVICE FOR HIGH FREQUENCY AND HIGH POWER USE, decided July 26, 1973, Interference No. 98,345, claims 2 and 3.

Patent No. 3,450,748, W. D. Schaeffer, PREPARATION OF VINYL ACETATE ACETALDEHYDE AND ACETIC ACID FROM ETHYLENE, decided Aug. 14, 1973. Interference No. 97,887, claim 1.

Patent No. 3,495,651, J. Rokop and L. J. Gibson, STARTING DEVICE FOR CONTINUOUS CASTINGS, decided June 25, 1973, Interference No. 97,430, claims 1, 2, 3, 5, 6 and 7.

Patent No. 3,500,592, R. A. Harrist, PLASTIC HUB AND THE APPLICATION THEREOF TO AN ABRASIVE WHEEL, Decided July 5, 1973, Interference No. 97,840, claims 1, 4, 5 and 6.

Patent No. 3,513,199, S. T. Ross and C. L. Zirkle, SUBSTITUTED ANILINO BENZYL ALCOHOLS, decided May 25, 1973, Interference No. 97,961, claim 2.

Patent No. 3,515,855, A. L. Mix, Jr., XEROGRAPHIC FUSING APPARATUS, decided July 26, 1973, Interference No. 98,117, claims 1, 2, 4, 5, 6, 7, 8, 9, 10 and 12.

Patent No. 3,530,333, G. A. Roberts, CONTROL SYSTEM, decided Aug. 9, 1973, Interference No. 98,101, claims 14, 18 and 19.

Patent No. 3,555,159, L. I. Feldman, ANTIMICROBIAL COMPOSITION AND METHOD OF USE, decided Aug. 20, 1973, Interference No. 97,948, claims 1, 2, 3 and 4.

Patent No. 3,609,120, P. A. Hoyle and D. A. Wood, NOVEL CHEMICAL COMPOUNDS AND STABILIZED HALOGEN CONTAINING RESINS, decided Aug. 30, 1973, Interference No. 98,003, claims 1, 2 and 3.

Patent No. 3,624,226, M. F. Hoover and D. L. Schiegg, ELECTROGRAPHIC ORGANIC PHOTOCONDUCTOR COMPRISING OF N,N,N′,N′-TETRABENZYL-4,4′-OXYDIANALINE, decided Aug. 27, 1973, Interference No. 98,081, claims 1, 2, 3 and 4.

Patent No. 3,628,198, F. Katzman, PROTECTIVE COPING FOR A SWIMMING POOL, decided July 3, 1973, Interference No. 98,211, claims 1, 2, 3, 5, 6 and 7.

Patent No. 3,643,142, L. E. McBride, Jr., A. C. MOTOR CONTROL SYSTEM UTILIZING A SELECTIVELY ENERGIZABLE SEMICONDUCTOR SWITCH MEANS, decided Aug. 27, 1973, Interference No. 98,053, claims 1 and 19.

Dedications

Reissue No. 26,294.—*Harold G. Sowman,* Maplewood, and *James R. Johnson,* White Bear Lake, Minn. CRYSTALLINE SPHERULES. Patent dated Nov. 7, 1967. Dedication filed May 8, 1973, by the assignee, *the United States of America.*

Hereby dedicates to the Public of the United States the portion of the term of the patent subsequent to Feb. 12, 1973.

Reissue No. 27,264.—*Harold G. Sowman,* Maplewood, and *James R. Johnson,* White Bear Lake, Minn. METHOD OF MAKING SPHERULES OF A CRYSTALLINE NUCLEAR FUEL CARBIDE. Patent dated Jan. 11, 1972. Dedication filed May 8, 1973, by the assignee, *the United States of America.*

Hereby dedicates to the Public of the United States the portion of the term of the patent subsequent to Feb. 12, 1973.

2,736,140.—*Lloyd V. Black,* Tarentum, Pa. APPARATUS FOR TREATING SHEET GLASS. Patent dated Feb. 28, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

2,736,996.—*Eugene Hoyet,* Tarentum, Pa. PLASTER APPLICATOR. Patent dated Mar. 6, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

2,774,190.—*Florian V. Atkeson,* Springdale, Pa. ANNEALING GLASS. Patent dated Dec. 18, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,781,534.—*Carl J. Cochran,* New Kensington, and *Martin W. Neuhausen,* Zelienople, Pa. WASHER FOR BENT LAMINATED GLASS. Patent dated Feb. 19, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,796,475.—*Alexander Finlay, Jr.,* Columbus, Ohio. HIGH SPEED SWITCH. Patent dated June 18, 1957. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

2,816,023.—*Milton Genser* and *Worth P. Allred,* Columbus, Ohio. SEMICONDUCTOR MATERIAL AND METHOD OF PREPARING SAME. Patent dated Dec. 10, 1957. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

2,838,898.—*William Owen,* Pittsburgh, Pa. GLASS HANDLING MECHANISM. Patent dated June 17, 1958. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,840,953.—*Lloyd V. Black,* Tarentum, Pa. GUIDE FOR GLASS BENDING MOLDS. Patent dated July 1, 1958. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,889,492.—*Robert Willardson* and *Albert C. Beer,* Columbus, Ohio. SWITCHING CIRCUITS AND METHODS. Patent dated June 2, 1959. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

2,910,813.—*Guy C. De Vore,* Cheswick, Pa. METHOD FOR REMOVING SURFACE BLEMISHES. Patent dated Nov. 3, 1959. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

2,917,921.—*Maynard B. Neher,* Columbus, Ohio. MECHANICAL APPARATUS FOR TESTING FLEXIBLE AND PLIABLE MATERIAL. Patent dated Dec. 22, 1959. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

2,934,225.—*Serafine Serventi,* Creighton, Pa., and *Jack Schweppe,* Shelbyville, Ind. METHOD AND APPARATUS FOR FEEDING BATCH MATERIALS. Patent dated Apr. 26, 1960. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

2,950,220.—*Milton Genser* and *Worth P. Allred,* Columbus, Ohio. PREPARATION OF P-N JUNCTIONS BY THE DECOMPOSITION OF COMPOUNDS. Patent dated Aug. 23, 1960. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,013,193.—*Henry Clay Gorton,* Hillards, and *Wilbur L. Mefferd* and *Robert K. Willardson,* Columbus, Ohio. COMPOUND SEMICONDUCTOR DEVICES. Patent dated Dec. 12, 1961. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,023,133.—*Wallace J. Lewis* and *Glenn E. Faulkner,* Columbus, Ohio. WELDING FLUXES. Patent dated Feb. 27, 1962. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,129,188.—*Harold G. Sowman,* Maplewood, and *James R. Johnson,* White Bear Lake, Minn. CRYSTALLINE SPHERULES. Patent dated Apr. 14, 1964. Dedication filed May 8, 1973, by the assignee, *the United States of America.*

Hereby dedicates to the Public of the United States the portion of the term of the patent subsequent to Feb. 12, 1973.

3,163,609.—*Harold G. Sowman,* Maplewood, and *James R. Johnson,* White Bear Lake, Minn. CRYSTALLINE SPHERULES. Patent dated Dec. 29, 1964. Dedication filed May 8, 1973, by the assignee, *the United States of America.*

Hereby dedicates to the Public of the United States the portion of the term of the patent subsequent to Feb. 12, 1973.

3,625,075.—*Jeremy M. Harris,* Worthington, Ohio. MECHANICAL AMPLIFIER. Patent dated Dec. 7, 1971. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Certificates of Correction for the Week of Nov. 27, 1973

P.P. 3,382
Re. 27,639
D. 225,734
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National Technical Information Service

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents; 18th and C Streets NW., Washington, D.C. 20240

Patent 3,755,106. Electrolytic Oxidation of S b^2 S^3. Filed May 15, 1972. Patented Aug. 28, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents; Office of Naval Research; Code 302; Arlington, Va. 22217

Patent 3,627,578. Method of Making a Photoelectrolytic Imaging Device. Filed Nov. 5, 1969. Patented Dec. 14, 1971. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents, Washington, D.C. 20545

Patent 3,723,193. Process for Producing a Fine-Grained 316 Stainless Steel Tubing Containing a Uniformly Distributed Intragranular Carbide Phase. Filed Oct. 27, 1970. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,725,661. Electromagnetic Disturbance Neutralization Radiation Detectors. Filed Sept. 1, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,726,956. Method for Dissolving Molybdenum and Tungsten. Filed Feb. 23, 1972. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,727,027. Method of Balancing Very Small Rotating Objects Using Air Jet Acceleration. Filed Mar. 25, 1971. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,731,523. Hydrogen Activity Meter. Filed Feb. 23, 1971. Patented May 8, 1973. Not available NTIS.

Patent 3,736,411. Graphics Display System. Filed May 17, 1971. Patented May 29, 1973. Not available NTIS.

Patent 3,736,794. Apparatus for Testing Ductility of Sheets. Filed Apr. 2, 1946. Patented June 5, 1973. Not available NTIS.

Patent 3,737,211. Ferroelectric Type Optical Filter. Filed Dec. 1, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,378,392. Gas Leak Valve. Filed Dec. 1, 1971. Patented June 12, 1973. Not available NTIS.

Patent 3,741,627. Strain Biased Ferroelectric Electro-Optics. Filed Dec. 1, 1971. Patented June 26, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY

Chief, Patents Division; Office of the Judge Advocate General; Patent Division Rm. 2c-455; Pentagon; Washington, D.C. 20310

Patent 3,618,249. Pivotally Mounted Stock for Firearms. Filed Aug. 1, 1969. Patented Nov. 9, 1971. Not available NTIS.

Patent 3,618,861. Diverter Valve Flow Throttle. Filed Jan. 14, 1970. Patented Nov. 9, 1971. Not available NTIS.

Patent 3,620,578. Method of Retaining Inner Race of Bearing for Lubricated Pin Track. Filed Nov. 26, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,620,939. Coating for Magnesium and Its Alloys and Method of Applying. Filed Mar. 17, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,621,258. Peltier Controlled Bolometer Temperature Reference Technique. Filed Mar. 18, 1970. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,621,461. Self-Pumped Electroadiabatic Laser. Filed Sept. 9, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,624,095. 4 Cyanoformyl 1 Alkyl Pyridinium Halide Oxime and Its Derivatives. Filed Sept. 11. 1962. Patented Nov. 30, 1971. Not available NTIS.

Patent 3,625,907. Corrosion Inhibited Paint Removing Composition. Filed Dec. 1, 1969. Patented Dec. 7, 1971. Not available NTIS.

Patent 3,628,633. Linear and Angular Velocity Brake. Filed Feb. 25, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,628,638. Hydraulic Mitigator. Filed Feb. 2, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,628,868. Laser Boresighting Method and Apparatus. Filed Sept. 9, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,007. Reserve Battery Electrodes Using Bonded Active Materials. Filed Aug. 6, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,016. Method of Making an Insulated Gate Field Effect Device. Filed Mar. 5, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,100. Optical Shutter Composition and Method of Producing Same. Filed Oct. 10, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,410. Alpha Adrenergic Blocking Agents. Filed May 23, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,591. Protective Light Image Translating System. Filed Feb. 14, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,602. Parametric Optical System. Filed May 15, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,639. Measuring Instrument. Filed July 16, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,698. Mesocavity Specular Integrator Refractometer. Filed Apr. 21, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,735. Waveguide Power Limiter Comprising a Longitudinal Arrangement of Alternate Ferrite Rods and Dielectric Spacers. Filed Oct. 1, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,633,575. Folded Lightweight Mask. Filed Mar. 20, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,098. Fresh Apricot Flavor Additive Composition and Method of Enhancing the Flavor of Freeze-Dehydrated Apricots. Filed May 27, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,265. Skin Cleaner Requiring No Addition of Water for Cleaning Therewith. Filed Nov. 27, 1968. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,636. Automatic Circuit Control Switch. Filed Sept. 9, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,829. Resolution of Address Information in a Content Addressable Memory. Filed Oct. 8, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,840. High Temperature Warning System. Filed Dec. 19, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,636,192. Meningococcal Polysaccharide Vaccines. Filed Jan. 13, 1970. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,640,859. Grease Compositions. Filed Sept. 24, 1969. Patented Feb. 8, 1972. Not available NTIS.

Patent 3,641,869. Cartridge Chamber Structure to Compensate for Variable Headspace. Filed June 9, 1970. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,642,631. Substituted Bithiophenes. Filed Nov. 24, 1970. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,642,332. Track Pad Retention Device. Filed Feb. 24, 1970. Patented February 15, 1972. Not available NTIS.

Patent 3,645,206. Ammunition Cartridge. Filed Feb. 19, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,810. Solid Fuel Composition. Filed June 14, 1955. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,263. Semi-Automatic Television Tracking System. Filed Jan. 4, 1971. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,656,983. Shell Mold Composition. Filed Oct. 14, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,665,514. Low Profile Size Adjustable Protective Helmet. Filed Sept. 22, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,665.857. Base Ejecting Ordnance Projectile. Filed Nov. 23, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,040. Sensor for Detecting Radio Frequency Currents in Carbon Bridge Detonator. Filed Sept. 28, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,343. Means for Attaching Barrel to Crossover Slide for Quick Replacement. Filed Dec. 30, 1969. Patented June 6, 1972. Not available NTIS.

Patent 3,671,968. Two Channel Direction Finder. Filed Jan. 26, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,673,041. Heat Sealer. Filed Sept. 8, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,673,362. Electric Impact Switch. Filed May 14, 1971. Patented June 27, 1972. Not available NTIS.

Patent 3,673,492. Voltage Controlled Hybrid Attenuator. Filed July 27, 1971. Patented June 27, 1972. Not available NTIS.

Patent 3,673,570. Combination Emitter Follower Digital Line Driver/Sensor. Filed Sept. 11, 1969. Patented June 27, 1972. Not available NTIS.

Patent 3,691,478. Laser Energy Monitor and Control. Filed Nov. 9, 1970. Patented Sept. 12, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters; NASA—Code GP–2; Washington, D.C. 20546

Patent application 361,906. Rotary Solenoid Shutter Drive Assembly and Rotary Inertia Damper and Stop Plate Assembly. Filed May 21, 1973. PC $3/MF $1.45.

Patent application 362,145. Vehicle Locating System Utilizing AM Broadcasting Station Carriers. Filed May 21, 1973. PC $4/MF $1.45.

Patent application 362,146. Peak Holding Circuit for Extremely Narrow Pulses. Filed May 21, 1973. PC $3/MF $1.45.

Patent application 365,544. Holographic Device. Filed May 31,1973. PC $3/MF $1.45.

Patent application 367,292. Electrostatic Entrained Material Measurement System. Filed June 5, 1973. PC $3/MF $1.45.

Patent application 367,294. Determining Particle Density Using Known Material Hogoniot Curves. Filed June 5, 1973. PC $3.75/MF $1.45.

Patent application 367,267. Quiet Jet Transport Aircraft. Filed June 5, 1973. PC $3/MF $1.45.

Patent application 367,268. High Lift Aircraft. Filed June 5, 1973. PC $3/MF $1.45.

Patent application 367,606. Self-Energized Plasma Compressor. Filed June 6, 1973. PC $3/MF $1.45.

Patent application 370,255. Electrostatic Measurement System. Filed June 15, 1973. PC $3/MF $1.45.

Patent application 370,505. Stable Supply Oscillator. Filed June 15, 1973. PC $3/MF $1.45.

Patent application 370,582. Spacecraft Docking and Alignment System. Filed June 15, 1973. PC $3/MF $1.45.

Patent application 370,872. Tool for Use in Lifting Pin Supported Objects. Filed June 18, 1973. PC $3/MF $1.45.

Patent application 371,322. Covered Silicon Solar Cells. Filed June 18, 1973. PC $3/MF $1.45.

Patent application 372,142. Graded Bandgap al(X)ga (1–X)a S–Gas Solar Cell. Filed June 21, 1973. PC $3/MF $1.45.

Patent application 372,149. Combined Pressure Regulator and Shutoff Valve. Filed June 21, 1973. PC $3/MF $1.45.

Patent application 373,587. Pulse Stretcher for Narrow Pulses. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 373,588. Random Pulse Generator. Filed June 25, 1973. PC $3.25/MF $1.45.

Patent 3,730,287. Vehicle for Use in Planetary Exploration. Filed May 17, 1971. Patented May 1, 1973. Not available NTIS.

Patent 3,732,409. Counting Digital Filters. Filed Mar. 20, 1972. Patented May 8, 1973. Not available NTIS.

Patent 3,733,424. Electronic Strain-Level Counter. Filed July 8, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,733,463. Temperature Control System With a Pulse Width Modulated Bridge. Filed December 24, 1970. Patented May 15, 1973. Not available NTIS.

Patent 3,736,607. Life Raft Stabilizer. Filed Nov. 30, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,736,764. Temperature Controller for a Fluid Cooled Garment. Filed Apr. 25, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,736,849. On-Film Optical Recording of Camera Lens Settings. Filed Mar. 17, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,736,956. Floating Baffle To Improve Efficiency of Liquid Transfer From Tanks. Filed Sept. 16, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,117. Docking Structure for Spacecraft. Filed July 6, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,121. Dual Fuselage Aircraft Having Yawable Wing and Horizontal Stabilizer. Filed Dec. 9, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,181. Disconnect Unit. Filed Feb. 24, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,217. Visual Examination Apparatus. Filed July 6, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,231. High Pulse Rate High Resolution Optical Radar System. Filed Nov. 13, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,237. Monitoring Deposition of Films. Filed Nov. 18, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,639. Derivation of a Tangent Function Using an Integrated Circuit Four Quadrant Multiplier. Filed May 17, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,676. Low Phase Noise Digital Frequency Divider. Filed Nov. 18, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,757. Parasitic Suppressing Circuit. Filed May 15, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,776. Two Carrier Communication System With Single Transmitter. Filed June 9, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,815. High-Q Bandpass Resonators Utilizing Bandstop Resonator Pairs. Filed Nov. 27, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,824. Twisted Multifilament Superconductor. Filed Aug. 11, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,905. Method and Apparatus for Measuring Solar Activity and Atmospheric Radiation Effects. Filed Mar. 31, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,912. Collapsible High Gain Antenna. Filed Sept. 16, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,740,725. Automated Attendance Accounting System. Filed June 16, 1971. Patented June 19, 1971. Not available NTIS.

[FR Doc. 73–23058; Filed 10–30–73; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 10, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-03-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-09-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-08-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-18-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-18-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-04-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-08-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-17-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-02-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-04-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-21-72

Expiration of patents: The patents within the range of numbers indicated below expire during November 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,769,173 to 2,772,414, inclusive
Plant Patents..... Numbers 1,526 to 1,531, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 27, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T916,001
PROCESS FOR PREPARING POLYESTER FABRICS HAVING DESIRABLE WETTING AND SOIL RELEASE PROPERTIES

John R. Schwier, Route 6, Kingsport, Tenn. 37660

Filed July 20, 1972, Ser. No. 273,566
Int. Cl. D06m *5/02*
U.S. Cl. 8—115.5
No Drawing. 7 Pages Specification

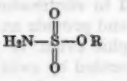
Disclosed is a process comprising contacting a polyester fabric with a composition comprising an alkali metal hydroxy compound and water so as to deposit on the surface of the fibers of the fabric at least 0.5 weight percent of the alkali metal hydroxy compound, based on the weight of the fabric, and heating the contacted fabric having at least 0.5 weight percent of the alkali metal hydroxy compound on the surface of the fibers of the fabric. The polyester fabric is contacted at a temperature in the range of 50° C. to 120° C. for a time in the range of 1 second to 30 minutes and the contacted fabric is heated at a temperature in the range of 80° C. to 200° C. for a period of time in the range of 5 seconds to 30 minutes. Poly(ethylene terephthalate) or poly(1,4-cyclohexylenedimethylene terephthalate) are preferred polyesters. The polyester fabrics treated in accordance with the process of the invention exhibit desirable wetting and soil release properties.

T916,002
COATING COMPOSITIONS

Matthew B. Launikitis, Parc-One, Apt. B–30, Lindenwold, N.J. 08021, and Clifford D. Marshall, 115 Rockingham Road, Cherry Hill, N.J. 08034

Filed Nov. 6, 1972, Ser. No. 304,163
Int. Cl. C08g *45/08, 45/10*
U.S. Cl. 260—831
No Drawing. 12 Pages Specification

Curable can coating compositions and their preparation are described. More particularly, amino-converted epoxy coatings which are especially suitable for coating aluminum beverage cans comprise (a) a polyglycidyl ether of a polyhydric phenol of molecular weight of from about 900 to about 4,500; (b) a converting resin selected from the group consisting of alkylated amino resins and phenolic resins wherein each of the resins contain alkylated methylol groups, (e.g., urea-formaldehyde resins); and (c) a catalytic amount of a compound of the formula



wherein R is hydrogen, ammonium or substituted ammonium which when heated above 200° F., decomposes into an acid and a volatile amine containing moiety (e.g., sulfuric acid, ammonium sulfanate, and pyridine sulfamate). A very desirable weight ratio of polyglycidyl ether to converting resin is from about 95:5 to about 30:70, and these curable coating compositions may be diluted with conventional diluents such as oxygenated hydrocarbons (ketones, ethers, esters, etc.) to facilitate handling.

T916,003
PRINTING PROCESS

Charles H. Coney, 2008 Canterbury Road 37660, and Glenna E. Burnett, 1701 John B. Dennis Bypass, A–18 37664, both of Kingsport, Tenn.

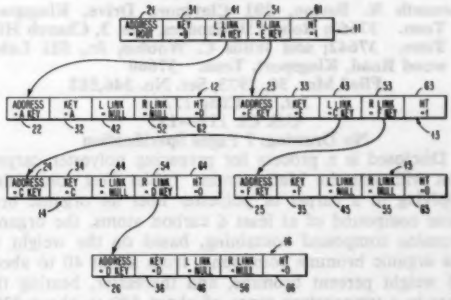
Continuation of application Ser. No. 117,593, Feb. 22, 1971. This application Dec. 11, 1972, Ser. No. 313,728
Int. Cl. D21h *1/10*
U.S. Cl. 117—15
1 Sheet Drawing. 11 Pages Specification

Cellulose propionate having a propionyl content of at least about 35%, an acetyl content of less than 4.5%, a hydroxyl content of between about 4.4% and about 12%, and an intrinsic viscosity of between about 0.02 and 20 seconds as measured by ASTM D–1343, is prepared by conventional procedures. Coating or printing compositions are prepared therefrom by dissolving the propionate in a blend of alcohol and water. The coating is applied to lithographic paper, preferably using printing rolls, over a wet ink coating of between 0.1 to 0.2 mil. Thickness of the cellulose propionate coating is normally between 0.1 to 0.2 mil. There is no sign of ink smear or incompatibility of the coating and ink. The coating appears thoroughly dry without the use of auxiliary heating means in about 3 seconds. The ink, which is still wet under the cellulose propionate coating, does not smear by moderate rubbing or when sheets thereof are stacked. Adhesion to both the wet ink and paper, gloss, and scuff resistance, are good. The coated paper is tested for repulpability and there is no sign of flakes of coating in a reformed sheet upon examination under a microscope.

T916,004
DATA TREE STRUCTURE AND MAINTENANCE METHOD

Watson M. Conner II, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 212,349, Dec. 27, 1971. This application Jan. 16, 1973, Ser. No. 324,036
Int. Cl. G06f *9/00*
U.S. Cl. 444—1
4 Sheets Drawing. 15 Pages Specification



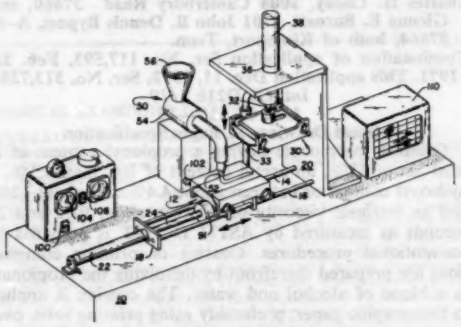
A 2 log binary tree data set structure where the null height of the nodes in any path is non-increasing, and where in any path there are not more than two nodes at

the same null height. Also, the method for adding to and deleting nodes from a 2 log binary tree so that the resulting structure is also a 2 log tree.

T916,005
ADHESIVE BOND TESTING APPARATUS

Cecil W. Dolen, Rte. 8, Rogersville, Tenn. 37857, and Robert M. Elliott, Rte. 4, Wines Circle, Blountville, Tenn. 37617

Filed Feb. 28, 1973, Ser. No. 336,580
Int. Cl. G01n *19/04*
U.S. Cl. 73—150 A
4 Sheets Drawing. 8 Pages Specification



Apparatus is disclosed for determining physical properties such as bond strength, shear strength, peel strength, etc., of an adhesive bond between two substrates. The apparatus comprises a pair of cooperating carriages to which workpieces are secured and means for applying a controlled amount of adhesive to one of the substrates. The apparatus further includes apparatus for bringing the substrates together so they will contact in the area of the applied adhesive and holding in that position for a predetermined length of time while measuring the applied force maintaining the substrates together. Means are also provided for measuring the magnitude of force required to separate the substrates in any of several directions to measure, for example, bond strength, shear strength or peel strength. Load cells are convenient means for determining the separation force. The apparatus is especially adapted for use with hot melt adhesives.

T916,006
METHOD FOR PREPARING FIRE-RETARDANT POLYESTER CARPETS

Kenneth R. Barton, 201 Claymore Drive, Kingsport, Tenn. 37663; Robert R. Sanders, Rte. 3, Church Hill, Tenn. 37642; and Willis C. Wooten, Jr., 521 Lakewood Road, Kingsport, Tenn. 37660

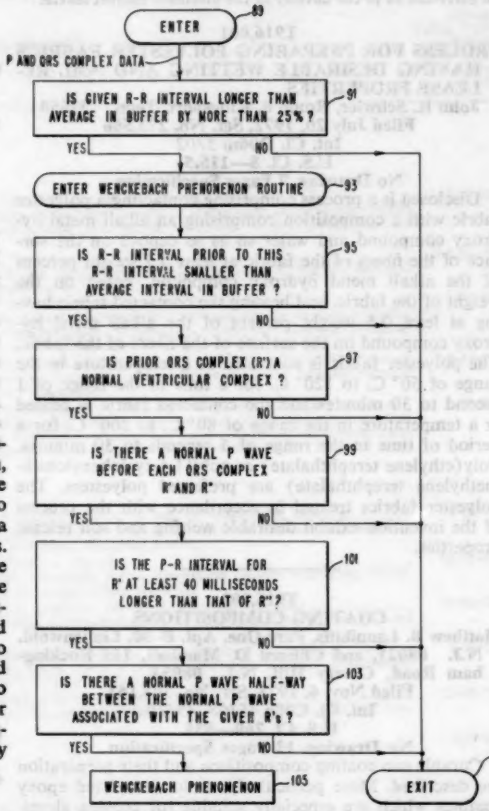
Filed Mar. 30, 1973, Ser. No. 346,512
Int. Cl. C08g *17/14*
U.S. Cl. 117—137
No Drawing. 7 Pages Specification

Disclosed is a process for preparing polyester carpets that will pass the Methenamine Tablet Test comprising applying to a carpet of polyester fiber an organic bromine compound of at least 6 carbon atoms, the organic bromine compound containing, based on the weight of the organic bromine compound, from about 40 to about 85 weight percent bromine, and thereafter, heating the fiber in a temperature range of about 100 to about 220° C. for a suitable time to diffuse into the fiber structure a sufficient quantity of organic bromine compound to result in, based on the weight of the fiber, from 0.5 to 2.0 weight percent bromine in the fiber structure.

T916,007
TWO-MODE ECG MONITORING SYSTEM

Raymond E. Bonner, Yorktown Heights, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 135,681, Apr. 20, 1971. This application Apr. 3, 1973, Ser. No. 347,522
Int. Cl. G06f *15/42, 9/18*
U.S. Cl. 340—172.5
5 Sheets Drawing. 32 Pages Specification


ENTER
89
P AND QRS COMPLEX DATA
IS GIVEN R-R INTERVAL LONGER THAN AVERAGE IN BUFFER BY MORE THAN 25% ?
91
YES
NO
ENTER WENCKEBACH PHENOMENON ROUTINE
93
IS R-R INTERVAL PRIOR TO THIS R-R INTERVAL SMALLER THAN AVERAGE INTERVAL IN BUFFER ?
95
IS PRIOR QRS COMPLEX (R') A NORMAL VENTRICULAR COMPLEX ?
97
IS THERE A NORMAL P WAVE BEFORE EACH QRS COMPLEX R' AND R"
99
IS THE P-R INTERVAL FOR R' AT LEAST 40 MILLISECONDS LONGER THAN THAT OF R" ?
101
IS THERE A NORMAL P WAVE HALF-WAY BETWEEN THE NORMAL P WAVE ASSOCIATED WITH THE GIVEN R's ?
103
WENCKEBACH PHENOMENON
105
EXIT
97

The monitoring and analysis of electrocardiographic signals, in the coronary care unit, to identify arrhythmias, and the like, requires the immediate determination of catastrophic event information and the subsequent determination of trend information. To achieve this end, a general purpose digital computer is shown generally within block **1** operated to continuously monitor, real time, selected ECG data and provide an alarm upon the occurrence of a catastrophic event. In addition, the computer is operated as represented by switch **27** and control block **29** to intermittently store, real time, fixed intervals of the selected ECG data. After each fixed interval of selected ECG data is stored in disk store **23**, for example, the computer is operated to analyze for ECG events indicative of cardiac trends. During this trend analysis operation no selected ECG data is stored but the computer is still undergoing the catastrophic event analysis operation. After each trend analysis operation, another fixed interval of selected ECG data is stored. During each storage operation, background operations may be performed, in addition to the catastrophic event analysis operation.

T916,008
METHOD FOR PREPARING FIRE-RETARDANT POLYESTER FIBERS

Allan R. Rothwell, Rte. 8, Lonesome Pine Road, and Gary L. Bond, Rte. 10, Country Joy Apartments, Apt. 5, both of Kingsport, Tenn. 37664

Filed Apr. 6, 1973, Ser. No. 348,547
Int. Cl. D06p *5/00*; C09k *3/28*
U.S. Cl. 8—17
No Drawing. 8 Pages Specification

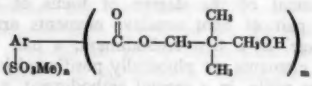
Disclosed is a process for preparing fire-retardant polyester fibers comprising contacting, at a temperature in the range of 350° to 410° F., for a period of time in the range of 15 to 90 seconds a polyester fiber, a disperse dye, and an organic bromine compound of at least 6 carbon atoms that does not chemically react with the polyester, the organic bromine compound containing, based on the weight of the organic bromine compound, from about 40 to about 85 weight percent bromine. Poly(ethylene terephthalate) and poly(1,4-cyclohexylenedimethylene terephthalate) fibers are particularly desirable polyester fibers. Tris(2,3-dibromopropyl) phosphate is a particularly desirable organic bromine compound.

T916,009
LINEAR POLYESTERS HAVING A HIGH AFFINITY TOWARDS BASIC DYESTUFFS

Francesco Siclari, Barlassina, Bruno F. D'Alo, Palazzolo Milanese, and Alessandro Biggio, Cesano Maderno, Italy, assignors to Snia Viscosa Società Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Apr. 24, 1973, Ser. No. 354,092
Claims priority, application Italy, Apr. 27, 1972, 23,643/72
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 S
No Drawing. 10 Pages Specification

A method is disclosed for producing synthetic polymers of the polyester or polyether-ester type, which are adapted to be converted into filaments or fibers and which have a high affinity for basic dyestuffs and improved dyeing speed, and more particularly, polyethyleneterephthalate, in which a bicarboxylic or oxycarboxylic acid, or an ester-forming derivative thereof, and an aliphatic glycol are copolymerized with an aromatic compound having the general formula:



wherein *m* and *n* are equal to 1 or 2, Ar is an aromatic radical (such as phenylene and naphthylene) substituted by the sulphonic group or groups and Me is a hydrogen atom, an alkali metal, or an alkaline earth metal. The colors obtained are extremely brilliant and have an outstanding fastness to washings.

T916,010
COATING COMPOSITIONS

Charles H. Coney, 2008 Canterbury Road, Kingsport, Tenn. 37660

Filed May 14, 1973, Ser. No. 360,284
Int. Cl. G03c *1/60*
U.S. Cl. 96—91 R
No Drawing. 6 Pages Specification

Coating compositions having cellulose propionate as the film-forming material and containing light-sensitive diazo compounds are disclosed. The cellulose propionate has from 0 to about 4.5% acetyl content by weight, from about 4.4% to about 12% hydroxyl content by weight and a propionyl content of 35% by weight or more. The cellulose propionate has a viscosity of between about 0.02 and 20 seconds, as measured by ASTM D–1343. The cellulose propionate and light-sensitive diazo compound are disclosed in a lower alcohol or a mixture of a lower alcohol and water and applied to a substrate. The coating, when dried by evaporation of the water and alcohol, may be developed by conventional techniques.

T916,011
POLYESTER COATING COMPOSITION

Peter M. Grant, Hemlock Park, Kingsport, Tenn. 37663

Continuation of application Ser. No. 236,768, Mar. 22, 1972. This application June 6, 1973, Ser. No. 367,679
Int. Cl. C08b *21/06*, *27/66*
U.S. Cl. 260—16
No Drawing. 14 Pages Specification

A polyester coating composition comprising a linear polyester containing terephthalic acid and either neopentyl glycol or a mixture of neopentyl glycol and ethylene glycol, cellulose acetate butyrate, a plasticizer, and optionally a stabilizer and/or pigment. The coating can be applied to a heatable substrate in powder form and caused to fuse by application of heat to produce a thin, smooth, uncratered surface that exhibits desirable resistance to weathering.

REISSUES

NOVEMBER 27, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,815

PROCESS FOR PRODUCING ZEARALENONE

Eric T. Woodings, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Original No. 3,661,714, dated May 9, 1972, Ser. No. 47,639, June 18, 1970. Application for reissue No. 10, 1972, Ser. No. 305,252

Int. Cl. C12d *13/00*

U.S. Cl. 195—36 R 13 Claims

The production of zearalenone in a submerged fermentation process employing submergible, zearalenone-producing strains of Gibberella zeae is enhanced by partial replacement of the fermentation medium.

27,816

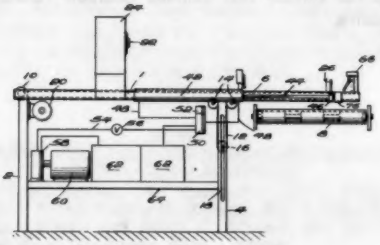
METHOD AND APPARATUS FOR TRANSFERRING ARTICLES

William E. Story, Knoxville, Tenn., assignor to East Tennessee Packing Company, Knoxville, Tenn.

Original No. 3,550,749, dated Dec. 29, 1970, Ser. No. 748,791, July 30, 1968. Application for reissue July 7, 1972, Ser. No. 269,894

Int. Cl. B65g *15/28, 47/26*

U.S. Cl. 198—31 AB 9 Claims



Transfer equipment for conveying a series of articles in a row and depositing them in multiple rows onto a receiving conveyor. The transfer equipment includes an endless transfer conveyor having a rectilinear movable end portion which reciprocates across the surface of the receiving conveyor at a predetermined rate of deposit a row of articles on the receiving conveyor. The rate at which the end portion is moved back and forth may be adjusted by controls to effect the desired arrangement of rows on the receiving conveyor.

27,817

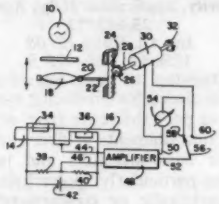
AUTOMATIC FOCUSING APPARATUS USING A DIFFUSING ELEMENT

Dwin R. Craig, Gaithersburg, Md., assignor to Logetronics, Inc., Alexandria, Va.

Original No. 3,493,764, dated Feb. 3, 1970, Ser. No. 681,940, Nov. 9, 1967, which is a continuation of Ser. No. 464,817, June 17, 1965, which in turn is a continuation-in-part of Ser. No. 101,701, Apr. 10, 1961. Application for reissue June 9, 1970, Ser. No. 44,909

Int. Cl. G01b *9/00;* G01j *1/36;* G03b *3/00*

U.S. Cl. 250—204 16 Claims



Measurement of the degree of focus of an image wherein a pair of light sensitive elements are exposed to the image. In a first embodiment, a pair of photoconductive elements are physically positioned in different focal planes while, in a second embodiment, a light diffusing medium is associated with one of a pair of photosensitive elements whereby that element will receive only average or background illumination. In both embodiments, as the degree of focus of image is varied, an electrical output signal commensurate with focus will be generated.

27,818

TITANIUM DIOXIDE PIGMENT COATED WITH SILICA AND ALUMINA

Alfred J. Werner, Newport, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original No. 3,437,502, dated Apr. 8, 1969, Ser. No. 717,029, Mar. 28, 1968, which is a continuation-in-part of Ser. No. 519,194, Jan. 7, 1966. Application for reissue June 2, 1972, Ser. No. 259,336

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 10 Claims

Improved titanium dioxide pigments having high opacity and outstanding ease of dispersibility in liquid coating compositions are prepared by wet treatment of a

titanium dioxide base pigment by processes wherein from 0.5 to 25 percent of dense silica is precipitated as a dense, adherent coating on the titanium dioxide, and thereafter from 0.1 to 10 percent of alumina is precipitated in an aqueous slurry of the silica-coated pigment, the percents of silica and alumina both being by weight, based on the weight of titanium dioxide. The treated pigment is recovered, dried and preferably dry-milled. Paints made with the finished pigments have excellent smoothness and outstanding durability upon outdoor exposure.

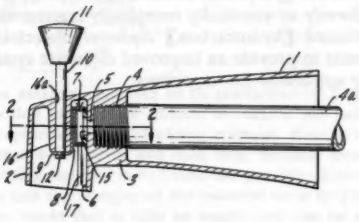
27,819

TUB DIVERTER SPOUT

Alfred M. Moen, 25 Lakeview Drive, Grafton, Ohio 44044

Original No. 3,419,914, dated Jan. 7, 1969, Ser. No. 614,197, Feb. 6, 1967. Application for reissue Nov. 26, 1971, Ser. No. 202,708

Int. Cl. E03c *1/01*; F16k *51/00*
U.S. Cl. 4—148 **8 Claims**



This invention relates to a diverter for use in a combination shower and tub plumbing fixture in which the diverter automatically returns to the tub position when the water is turned off, and in which water pressure, acting on a portion of the diverter, is effective to hold the diverter in the shower position, once it has been moved to this position.

27,820

WATER ABSORBENT WEB AND ITS PRODUCTION

Alfred Politzer, Fairview Park, Galib-Bey Atam Alibeckoff, Lakewood, and Pao-Chi Wang, Bay Village, Ohio, assignors to Nylonge Corporation, Cleveland, Ohio

No Drawing. Original No. 3,657,035, dated Apr. 18, 1972, Ser. No. 844,153, July 23, 1969. Application for reissue Aug. 29, 1972, Ser. No. 284,666

Int. Cl. B32b *5/32, 23/06, 31/06*
U.S. Cl. 156—78 **11 Claims**

A web which is soft and rapidly and highly water absorbent when both wet and dry is produced by sandwiching under pressure a layer of cellulose pulp fiber reinforced, foamed viscose between thin fleeces of unbonded cotton fibers and regenerating the viscose cellulose. The product is a reticulated matrix of regenerated cellulose and dispersed pulp fibers with the fleece fibers embedded in the opposite faces of the regenerated cellulose layer.

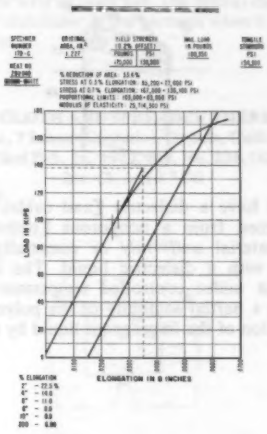
27,821

METHOD OF PROCESSING STRESSED STEEL MEMBERS

Edward Schechter, Shavertown, Pa., assignor to Stressteel Corporation, Wilkes-Barre, Pa.

Original No. 3,125,469, dated Mar. 17, 1964, Ser. No. 251,951, Jan. 16, 1963. Application for reissue July 29, 1971, Ser. No. 167,298

Int. Cl. C21d *7/02, 7/14*
U.S. Cl. 148—12 **1 Claim**



A method is provided for producing a high tensile strength alloy steel bar having a high proportional limit compared to its yield strength simultaneously with a predictable modulus of elasticity by cold stretching the bar to a predetermined stress of the ultimate tensile strength, stress relieving the bar by heating for a period of time at a predetermined temperature level, and thereafter cooling the bar to a predetermined temperature level.

27,822

1-SUBSTITUTED PHENOXY-2-HYDROXY-3-ISOPROPYLAMINO-PROPANES

Herbert Koppe, Ingelheim am Rhein, Albrecht Engelhardt, Mainz, Gerhard Ludwig, Lippamsdorf, and Karl Zeile, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim, G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Original No. 3,459,782, dated Aug. 5, 1969, Ser. No. 619,141, Feb. 28, 1967, which is a continuation-in-part of Ser. No. 391,012, Aug. 20, 1964. Application for reissue July 6, 1971, Ser. No. 160,223

Claims priority, application Germany, Aug. 26, 1963, B 73,262; June 24, 1966, B 87,707; Dec. 30, 1966, B 90,543; Feb. 6, 1967, B 91,070

Int. Cl. C07c *121/50, 121/66*
U.S. Cl. 260—465 E **10 Claims**

1-substituted phenoxy-2-hydroxy-3-N-isopropyl-aminopropanes and acid addition salts thereof, possessing bradycardia activity and N-isopropyl-nor adrenaline antagonistic activity.

27,823

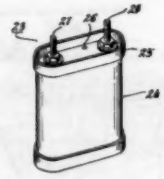
IMPREGNATED POLYPROPYLENE FILM IN A SEALED HOUSING

Eugene B. Cox, Fairfield, Conn., assignor to General Electric Company

Original No. 3,450,968, dated June 17, 1969, Ser. No. 659,113, Aug. 8, 1967, which is a division of Ser. No. 587,835, Oct. 19, 1966, now Patent No. 3,363,156, which in turn is a continuation-in-part of Ser. No. 508,529, Nov. 18, 1965, and Ser. No. 513,240, Dec. 13, 1965, both now abandoned. Application for reissue Apr. 12, 1971, Ser. No. 133,112

Int. Cl. H05k *5/00*

U.S. Cl. 174—17 LF 12 Claims



Capacitors have a dielectric [and cables have an insulator] formed from a nonporous [polyolefin] *polypropylene* material *uniformly or* essentially completely impregnated with a dielectric liquid. The impregnation is carried out under controlled temperature conditions which causes a partial solubility of the polyolefin as well as an absorption of the impregnant liquid by the dielectric itself.

27,824

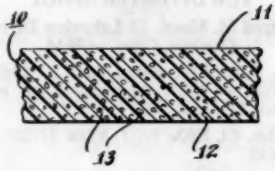
CAPACITOR WITH IMPREGNATED POLYPROPYLENE DIELECTRIC

Eugene B. Cox, Fairfield, Conn., assignor to General Electric Company

Original No. 3,363,156, dated Jan. 9, 1968, Ser. No. 587,835, Oct. 19, 1966, which is a continuation-in-part of Ser. No. 508,529, Nov. 18, 1965, and Ser. No. 513,240, Dec. 13, 1965, both now abandoned. Application for reissue Apr. 12, 1971, Ser. No. 135,505

Int. Cl. H01g *3/175, 3/195*

U.S. Cl. 317—259 14 Claims



Non-porous [polyolefin materials] *polypropylene films* are *uniformly* or essentially completely impregnated with a chlorinated [hydrocarbon] *diphenyl* dielectric liquid impregnant to provide an improved dielectric system particularly applicable for capacitors.

PATENTS

GRANTED NOVEMBER 27, 1973

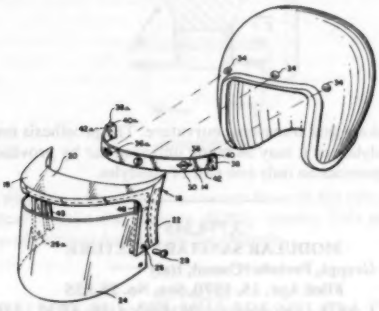
GENERAL AND MECHANICAL

3,774,239

VISOR ASSEMBLY HAVING REPLACEABLE FACE SHIELD

Nick Kotzar, Dover, Del., assignor to ILC Industries, Inc., Dover, Del.

Filed Mar. 22, 1971, Ser. No. 126,440
Int. Cl. A61f 9/04
U.S. Cl. 2—10 **6 Claims**



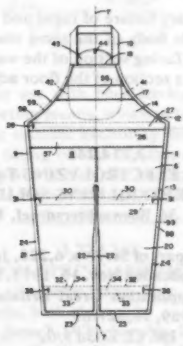
A visor assembly adapted to be positioned on a headgear structure that has a frame adapted to receive and hold transparent, replaceable face shielding material. Also, a visor assembly that will receive and hold thin, flexible, transparent face shielding material in its frame and provide support about the sides and top margins of the material so as to produce a rigid face shield that is light in weight and can be made to produce a curved face shielding that is desirable in visor assemblies.

3,774,240

SAFETY GARMENT

Leonard Gregory Johnson, San Rafael, Calif.

Filed Feb. 9, 1972, Ser. No. 224,830
Int. Cl. A41d 13/04
U.S. Cl. 2—51 **1 Claim**



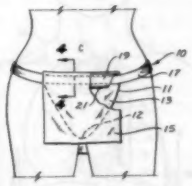
A safety garment for human wear has a flat first sheet of fabric generally symmetrical about a center line. The first sheet includes a continuous, approximately rectangular, central area merging with an upper bib portion and merging with a pair of lower individual leg portions. There is a neck loop at the top of the upwardly converging bib portion, and there are several casings extending across the first sheet and the leg portions approximately normal to the center line and open near the margins of the first sheet to receive curved spring clasps to shape the sheet approximately to fit a wearer. There is a smaller, second sheet of fabric, also symmetrical about the center line, secured to the bib portion along three sides to define a pocket with an open top. The pocket can be inverted to receive the remainder of the garment when it is folded and inserted therein.

3,774,241

LOINCLOTH AND SPREADER THEREFOR

John A. Zerkle, 7 Lomas Cantados, Orinda, Calif.

Filed Feb. 16, 1972, Ser. No. 226,762
Int. Cl. A41d 7/00
U.S. Cl. 2—67 **5 Claims**



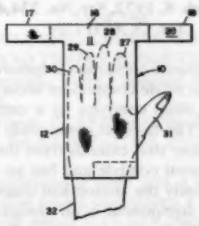
A garment such as a loincloth or the like and a spreader therefor effective to maintain the shape of the garment by preventing transverse collapse or bunching thereof. The loincloth includes a length of material adapted to extend between and upwardly from the leg juncture of one wearing the garment, and such length of material is equipped both along the front and rear of the torso adjacent the hips thereof with transversely oriented spreaders or stiffeners. A hip encircling band is attached to the spreader in one form of the garment to support the same therethrough, and the band is movable transversely with respect to the spreader to enable the garment to accommodate substantial body movements without significant displacement from the position intended therefor.

3,774,242

MITTEN FOR PHYSICAL THERAPY PATIENTS

Vivian R. Owen, Box 105, New Franken, Wis.

Filed Sept. 25, 1972, Ser. No. 291,996
Int. Cl. A41d 19/00
U.S. Cl. 2—158 **10 Claims**



A mitten for physical therapy patients is disclosed which comprises a tubular body of woven material closed at one end and open at the other end for receiving the first four fingers of

the patient and having a slit-like opening on one side for the thumb. The mitten ineludes means for removably securing the open end of the tubular body about the wrist of the patient. The mitten further includes means for removably securing the closed end of the tubular body of the mitten back onto the wrist of the patient adjacent the open end thereof in a manner retaining the first four fingers in a folded or clenched-fist position. In this manner, the mitten may be used to help a physical therapy patient grip a mechanical exercising bar or the like, or to maintain the hand of the patient in the position for function during physical therapy treatments involving manual manipulation of the arm of the patient.

3,774,243

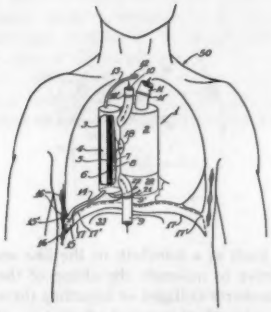
IMPLANTABLE POWER SYSTEM FOR AN ARTIFICIAL HEART

Daniel Y. C. Ng, Chicago; Sidney K. Wolfson, Jr., Highland Park, and Anthony J. Appleby, Chicago, all of Ill.

Division of Ser. No. 857,321, Sept. 12, 1969. This application Oct. 20, 1971, Ser. No. 191,058

Int. Cl. A61f *1/24*; A61n *1/36*

U.S. Cl. 3—1 **25 Claims**



An implantable hybrid power system for artificial hearts or pacemakers, which includes a fuel cell assembly air breathing cathode assembly, and method of operation of such system. In one system embodiment a storage battery is combined with a fuel cell for peak power requirements and for more nearly steady-state fuel cell operation. The fuel cell may have either an external anode fuel source, such as hydrogen or hydrazine, or utilize blood carbohydrates, such as glucose. Electrical output from the disclosed power system is used to power any desired type of artificial heart or pacemaker device.

3,774,244

KNEE-JOINT PROSTHESIS

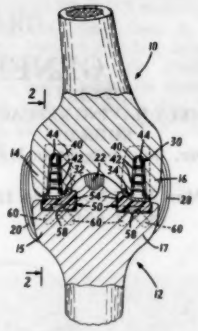
Peter S. Walker, New York N.Y., assignor to New York Society for the Relief of The Ruptured and Crippled, New York, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,479

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **10 Claims**

A knee-joint prosthesis comprises a femoral condyle component and a tibial condyle component secured, respectively, to the femoral and tibial condyles by a cement in resected areas of the bones. The femoral component is an elongated, doubly-curved member that extends from the anterior to the posterior of the femoral condyle and has an external surface shaped to match closely the anatomical shape of the femoral condyle. The tibial component is an elongated member extending from adjacent the anterior extremity to adjacent the posterior extremity of the tibial condylar plateau and positioned for engagement by and support of the fmoral component. The external surface of the tibial component closely matches in transverse cross-sections along its length the transverse shape of the external surface of the femoral component and is generated by a generally straight, anterior-posterior line



moved along said transverse curvature. The prosthesis may be duo-condylar, or it may be made uni-condylar by provision of the components on only one pair of condyles.

3,774,245

MODULAR SANITARY FIXTURE

Pierluigi Greppi, Perledo (Como), Italy

Filed Apr. 15, 1970, Ser. No. 28,855

Int. Cl. A47k *1/04, 3/22, 11/08*; E03c *1/18*; E03d *13/00*

U.S. Cl. 4—167 **5 Claims**

An improved sanitary fixture of rapid and easy application, comprising in a single body of the same material, the actual sanitary apparatus, a facing section of the wall for application of the apparatus and a section of the floor adjacent to the said wall.

3,774,246

APPARATUS FOR ELECTROLYZING TAP WATER TO PROVIDE STERILIZING SOLUTION

Henri Bernard Beer, 36 Boswachtersdreef, Heide-Kalmthout, Belgium

Continuation-in-part of Ser. No. 6,225, Jan. 27, 1970, abandoned. This application Nov. 16, 1971, Ser. No. 199,371

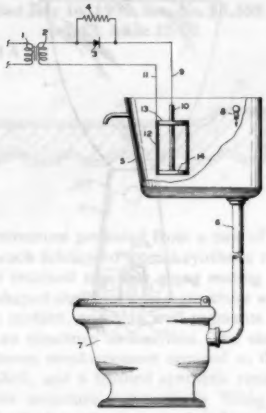
Claims priority, application Great Britain, Jan. 28, 1969, 4,649/69; Feb. 27, 1969, 10,627/69

Int. Cl. E03d *9/02*

U.S. Cl. 4—228 **1 Claim**

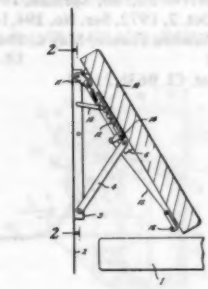
An apparatus for providing an aqueous sterilizing and deodorizing solution to equipment which is to be kept sanitary. The apparatus has means for confining a supply of tap water, said means having a tap water inlet and a solution outlet adapted to be connected to the equipment to be kept sanitary. An electrolytic cell is positioned in said confining means and has a cathode and an anode spaced from said cathode which is

of a material substantially resistant to chlorine and oxygen. Current supply means supplies a D.C. current to said cell in



such a way that a small reverse current flows in the cell so as to periodically make the cathode slightly anodic. This prevents buildup of calcium deposits on the cathode.

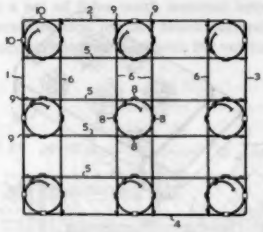
3,774,247
TILTABLE HEADBOARD
William J. Bradley, 4117 Sarong, Houston, Tex.
Filed May 17, 1971, Ser. No. 143,821
Int. Cl. A47c *17/00, 21/00*
U.S. Cl. 5—53 B **5 Claims**



A headboard for use with beds having tilting mechanism mounted on supporting means, which in turn may be mounted on a wall, or other suitable anchoring means, and which will permit adjustable tilting of the headboard, while permitting the headboard to pivot at one end and travel on a plane substantially with the surface of the bed at the other end.

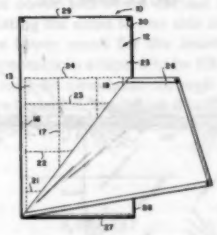
3,774,248
COIL SPRING ASSEMBLY
Robert J. Huras, Waterloo, and Eric G. Lautenschlager, Kitchener, Ontario, both of Canada
Filed June 2, 1972, Ser. No. 259,304
Claims priority, application Canada, July 6, 1971, 117474
Int. Cl. A47c *23/02*
U.S. Cl. 5—267 **1 Claim**

A coil spring assembly includes at least one row of coil springs, frame members at opposite ends of the row, and an anchor wire extending along the row adjacent one end of the springs. The anchor wire is shaped to provide a series of U-shaped hooks, one for each spring, extending laterally of the direction of the row and having a lateral dimension corresponding to the thickness of the wire of the spring. Each hook is engaged with a turn at the end of the spring, and the



anchor wire has opposite ends secured to the frame member to thereby tightly engage the hooks with the springs.

3,774,249
FOLDABLE MAT
Gilbert Ybarra, and Anne L. Ybarra, both of 732 Ellsworth Pl., Palo Alto, Calif.
Filed June 7, 1971, Ser. No. 150,683
Int. Cl. A47g *9/00*
U.S. Cl. 5—344 **9 Claims**



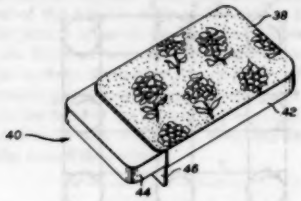
A foldable mat adapted to be carried by a child and used thereby at nursery school, kindergargen and elsewhere as a type of bed or pad for rest periods. The mat includes a soft, pliable core enclosed in a colorful casing stitched to the core along longitudinally extending and also along transversely extending lines, at least certain of which form hinges that facilitate a child's folding of the mat into a compact package for storage and carrying. A cover secured to the mat in generally overlying relation with the upper face of the cover serves as a blanket, and a protective sheet removably secured to the underside of the mat protects the same from dirt and abrasion during use. Pockets provided by the mat adjacent one end thereof permit a smock, cap and other articles to be conveniently and accessibly carried, and the folded mat can be placed within a napsack equipped with straps to permit the same to be carried as a backpack by a small child.

3,774,250
MATTRESS INCLUDING LAMINATED FOAM FABRICS AND THEIR PRODUCTION
Philip Miller, Norwalk, Conn., assignor to Chemstitch, Inc., New York, N.Y.
Filed Sept. 11, 1972, Ser. No. 288,246
Int. Cl. A47c *27/22, 27/18*
U.S. Cl. 5—345 **7 Claims**

A mattress comprising a core and a casing, at least the upper surface of said casing comprising a laminate of a fabric and a foam at least about 0.15 inch thick, said fabric being outside and being bonded over substantially its entire underface to said foam, said laminate having a three-dimensional contoured and patterned surface.

The fabric foam laminate is produced by printing adhesive from an engraved roll onto a foam sheet during compression

of the sheet and contacting the sheet with a fabric while the adhesive is tacky. The engraving of the roll is deep along some lines and shallow everywhere else for overall bonding. Immediately thereafter the laminate is cooled to quench and set the tacky adhesive so the laminate has relatively deep depressions corresponding to the deep engraving of the roll.



3,774,251

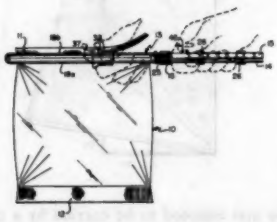
UTENSIL OR TOOL FOR HANDLING (BOIL-IN-BAG) POUCHES

Ronald C. Pellman, Trumbull, Conn., assignor to Utica Cutlery Company, Utica, N.Y.

Filed Oct. 15, 1971, Ser. No. 189,611

Int. Cl. B25b *7/22*

U.S. Cl. 7—5.4 **7 Claims**



A scissors-like instrument for opening bags and partially supporting them during emptying. Specifically a utensil or tool for handling "Boil-In-Bag" pouches after heating in boiling water to recondition the contents as by cooking in the case of food products. The tool is a device for grasping the bag at one end alongside of the bag sealing flange, and includes a knife for severing this flange thereby opening the pouch but leaving it supported by the tool.

3,774,252

SPACKLING KNIFE TOOL

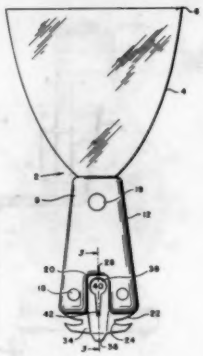
Joseph Cantales, New Rochelle, N.Y.

Filed Mar. 22, 1972, Ser. No. 237,013

Int. Cl. B25f *1/00;* **B25c** *1/00*

U.S. Cl. 7—14.1 A **16 Claims**

A spackling knife tool which performs the functions of a spackling knife, a nail puller, a picture-hanger remover, a screwdriver, and has means for gouging out cracks in plaster surfaces to provide a base to receive patching material. The tool is comprised of a flat blade member having a relatively wide end portion which serves as the spackling knife, and a shank portion to which top and bottom handle halves are riveted. At the end of the shank portion there is formed a chisel point which may be employed as a screwdriver. On each side of the shank portion adjacent the end thereof are picture-hanger removers formed by a tapered slot extending inward from the edge of the shank portion, and a pointed portion formed at the outer edge of said slots adjacent the end of the shank portion. Inwardly of the chisel point, a longitudinally oriented portion of the shank member is depressed below the plane of the blade to form a nail-puller having a bottom, side walls, and an inclined ramp leading from the bottom to the shank. The bottom and inclined wall have a nail aperture formed therein.



3,774,253

FLOATING SYSTEMS, ESPECIALLY MOORING BUOYS, FOR ANCHORING TO THE SEA-BED

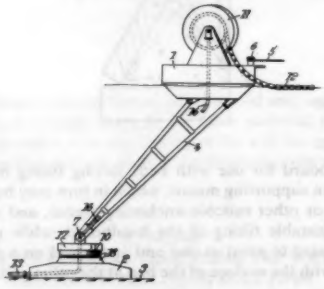
Claude M. Lecomte, Fontenay-aux-Roses, France, assignor to Entreprise D'Equipements Mecaniques et Hydrauliques E.M.H., Paris, France

Continuation of Ser. No. 32,568, April 28, 1970. This application Oct. 2, 1972, Ser. No. 294,162

Claims priority, application France, May 6, 1969, 6914351; Nov. 4, 1969, 6937812

Int. Cl. B63b *21/00*

U.S. Cl. 9—8 P **32 Claims**



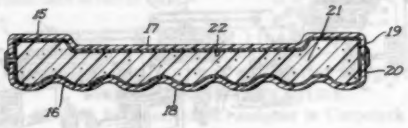
The system comprises a floating body such as a buoy or barge, connected to an anchoring base by at least one arm articulated to the base by a universal joint. The inclination of the arm can then vary according to the wind and current. Preferably the buoy is rigidly fixed to the arm. The inclination of the arm is particularly in the range 20° to 45°. The buoy may be flat and bear equipment such as winding drums for a flexible tube, for instance connecting a petroleum tank on the sea-bed to a ship. A pump may be arranged for actuation by the swell to drive equipment on the buoy through a hydraulic motor.

3,774,254

LAMINATE STRUCTURE FOR WATER SKIS

Leonard S. Meyer, Columbia, S.C., assignor to Berkley & Company, Inc., Spirit Lake, Iowa

Filed July 16, 1970, Ser. No. 55,355
Int. Cl. A63c 15/00
U.S. Cl. 9—310 A 10 Claims



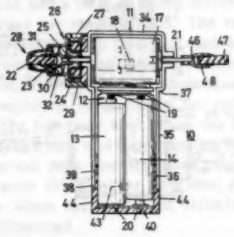
A water ski structure prepared from a pair of generally U-shaped shells, each fabricated from a synthetic resin film and arranged to be retained together along mating edges of the legs of said U-shaped shells to form a structure with a top surface, a bottom surface, and side wall segments defining and confining a core structure therewithin. The shells are reinforced with fibrous reinforcement secured to the inner surfaces of said shell, and a frothed synthetic resin is disposed within the core structure substantially filling the volume thereof. The frothed synthetic resin is selected so as to be bondable to the reinforced inner surface of the shells. In order to join the side wall segments together, it is preferred that generally H-shaped beads are utilized so as to secure and join the side wall segments of the shells together to form a composite side wall structure.

3,774,255

BATTERY OPERATED ERASER

Cohon Pao, First Floor No. 2 Hoi Ping Rd., Hongkong, Hong Kong

Continuation-in-part of Ser. No. 874,895, Nov. 7, 1969, abandoned. This application Nov. 29, 1971, Ser. No. 202,950
Claims priority, application Great Britain, June 20, 1969, 31,269/69
Int. Cl. A47l 5/24; B43l 19/00
U.S. Cl. 15—3.53 7 Claims



A portable electric eraser driven by a battery powered electric motor in which the motor has a driver shaft carrying an ink eraser at one end and a pencil eraser at the other end. A centrifugal fan is mounted on the shaft behind the pencil eraser and a sleeve around the fan provides suction near the pencil eraser for removing debris, with a retractable brush being on the end of the sleeve.

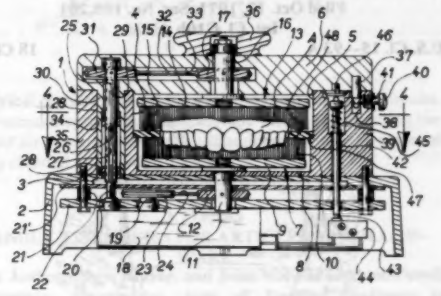
3,774,256

FALSE TEETH CLEANER

Oscar Gauthier, Ville de Brossard, Quebec, Canada, assignor to Dento Inc., East Montreal, Quebec, Canada

Filed Sept. 3, 1971, Ser. No. 177,684
Int. Cl. A46b 11/06
U.S. Cl. 15—21 R 9 Claims

A power-operated appliance for cleaning a set of false teeth. A circular brush is rotatably mounted in the bottom of an open top receptacle for rotation about a vertical axis. A cover is adapted to close this receptacle and carries another circular brush rotatably mounted about a vertical axis coaxial with the vertical axis of the first brush. An electric motor drives through a transmission the two brushes in opposite direction, so as to clean a set of false teeth inserted between the two brushes. The transmission for the brush carried by the cover includes a telescopic shaft coaxial with the vertical cover pivot



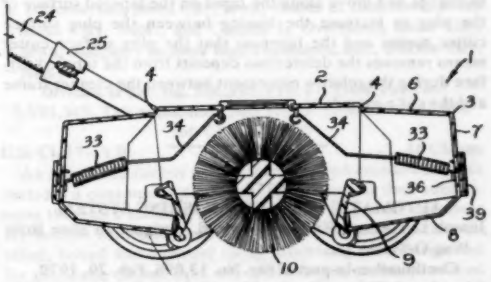
to allow lifting the cover and brush carried thereby off the receptacle and rotating the same to one side of the receptacle for uncovering the lower brush for the insertion of a set of false teeth. The receptacle is adapted to be filled with a cleaning liquid, which may be circulated through the receptacle. Locating means are provided to prevent rotation and displacement of the set of false teeth during cleaning.

3,774,257

CARPET SWEEPERS

Donald N. Smyth, South Plympton, and Bruce A. Heard, Plympton Park, both of Australia, assignors to S. A. Brush Company Limited, Albert Park, South Australia, Australia

Filed Nov. 23, 1971, Ser. No. 201,343
Claims priority, application Australia, July 19, 1971, PA 5593/71
Int. Cl. A47l 11/33
U.S. Cl. 15—48 4 Claims



A carpet sweeper having the body, end portions, strengthening partition walls and dust trays all integrally

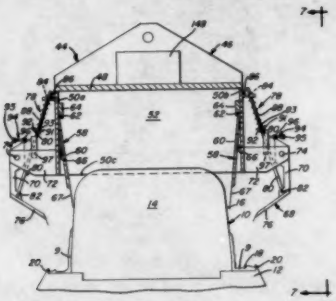
moulded from a suitable plastics material, the dust trays being hinged to the body portion along a hinge line formed by a weakened portion of the body material.

3,774,258

APPARATUS FOR CLEANING COKE OVEN DOORS

Albert T. Moreau, 91 Vermillion Dr., Levittown, Pa.

Filed Oct. 12, 1971, Ser. No. 188,281
Int. Cl. C10b *43/04*
U.S. Cl. 15—93 A **18 Claims**



A door cleaning apparatus for removing deposits of carbon, tar, or the like from a coke oven door is disclosed.

The coke oven door has a door frame, a plug on the oven side of the door frame and a sealing strip on the periphery of the door frame. The plug is provided with a tapered surface extending outwardly toward the door frame and defining a gas channel with the sealing strip on the periphery of the door frame. The door cleaning apparatus has a cleaner frame having a cleaner back plate and a cleaner side plate projecting from the cleaner back plate. The cleaner side plate and the cleaner back plate define a receiving cavity. Drive means are connected to either the cleaning apparatus or the oven door for causing relative reciprocating movement between the coke oven door and the cleaner frame between an aligned position where the coke oven door and the cleaner frame are aligned and a cleaning position where the cleaner frame receives the plug in the receiving cavity. A plug surface cutter means is mounted on the receiving cavity side of the cleaner side plate and has biasing means for biasing the plug surface cutter means inwardly toward the tapered surface of the plug. This drive means is operable to cause the plug surface cutter means to engage and move along the taper on the tapered surface of the plug to increase the biasing between the plug surface cutter means and the taper so that the plug surface cutter means removes the deleterious deposits from the tapered surface during the relative movement between the cleaner frame and the coke oven door.

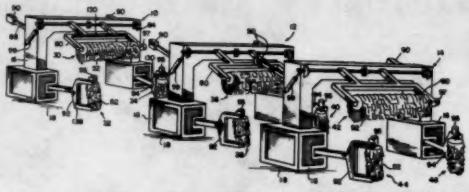
3,774,259

AUTOMATIC SURFACE POLISHING SYSTEM

Joseph L. Genaro, Knightstown, Ind., assignor to Shur Brite Wax-O-Matic, Inc.

Continuation-in-part of Ser. No. 13,096, Feb. 20, 1970, abandoned. This application May 18, 1971, Ser. No. 144,452
Int. Cl. B60s *3/06*
U.S. Cl. 15—97 R **15 Claims**

An automatic surface polishing system utilizing strips of material to apply polish to a finished surface and strips of material to subsequently buff that surface. Fabric strips are attached about the periphery of rotating drums. Polish is applied to the strips and is then applied by the strips to the surface and rubbed-in by intermittent contacts between the strips and the surface. The polished surface is caused to dry and is then buffed by additional dry fabric strips which make intermittent contact with the surface.

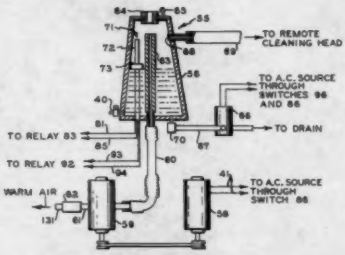


3,774,260

VACUUM PICK-UP SYSTEM

Ronald W. Emus, Jr., Billercia, Mass., assignor to Carpetech Corp., Everett, Middlesex County, Mass.

Filed Jan. 31, 1972, Ser. No. 221,983
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **10 Claims**


TO REMOTE CLEANING HEAD
TO A.C. SOURCE THROUGH SWITCHES 96 AND 86
TO DRAIN
TO RELAY 83
TO RELAY 92
WARM AIR
TO A.C. SOURCE THROUGH SWITCH 86

There is disclosed apparatus for cleaning carpets, upholstery and the like utilizing a motor driven separate reservoir system for supplying a cleaning solution to a remote cleaning head adapted to apply the cleaning solution to the material being cleaned, and a separate motor driven vacuum pick-up system for storing cleaning solution and entrained dirt picked up via the cleaning head. The reservoir system may typically include in combination with a reservoir tank, a cleaning fluid pumping circuit comprising fluid heating means, a fluid pump for supplying fluid from the reservoir tank to the heating means, pressure sensitive valve means for returning heated cleaning fluid to the reservoir tank when the fluid circuit to the cleaning head is closed, and flow sensitive means disposed between the reservoir tank and the fluid pump effective to disconnect the pump drive motor and shut down the fluid pump and heater when the supply of cleaning fluid in the

reservoir tank is exhausted. The vacuum system includes a vacuum tank, a vacuum pump driven by an electric motor for evacuating the tank, a dump pump driven by an electric motor for emptying the vacuum tank, a float actuated switching unit disposed in the vacuum tank, and switching means actuated by the switching unit effective to control the dump pump motor and disconnect the vacuum pump drive motor when the vacuum tank is full of fluid.

3,774,261

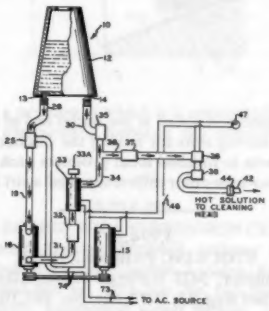
CARPET AND UPHOLSTERY CLEANING WITH FLUID PUMPING SAFETY FEATURE

James G. Colt, Belmont, Mass., assignor to Carpetech Corp., Everett, Middlesex County, Mass.

Filed Jan. 31, 1972, Ser. No. 221,999

Int. Cl. A47l 7/00

U.S. Cl. 15—321 **5 Claims**



There is disclosed apparatus for cleaning carpets, upholstery and the like utilizing a motor driven separate reservoir system for supplying a cleaning solution to a remote cleaning head adapted to apply the cleaning solution to the material being cleaned, and a separate motor driven vacuum pick-up system for storing cleaning solution and entrained dirt picked up via the cleaning head. The vacuum system may typically include a vacuum tank and a vacuum pump driven by an electric motor for evacuating the vacuum tank. The reservor system includes in combination with a reservoir tank a cleaning fluid pumping circuit comprising fluid heating means, a fluid pump for supplying fluid from the reservoir tank to the heating means, pressure sensitive valve means for returning heated cleaning fluid to the reservoir tank when the fluid circuit to the cleaning head is closed, and flow sensitive means disposed between the reservoir tank and the fluid pump effective to disconnect the pump drive motor and shut down the fluid pump and heater when the supply of cleaning fluid in the reservoir tank is exhausted.

3,774,262

PORTABLE VACUUM CARPET AND UPHOLSTERY CLEANING APPARATUS

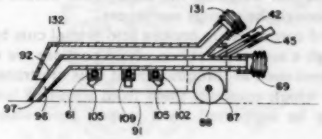
Peter C. Anthony, Waltham; James G. Colt, Belmont, and Solon Fournarakis, Waltham, all of Mass., assignors to Carpetech Corp., Everett, Mass.

Division of Ser. No. 25,521, April 3, 1970, Pat. No. 3,603,984. This application Jan. 10, 1972, Ser. No. 216,614

Int. Cl. A47l 7/00

U.S. Cl. 15—322 **4 Claims**

Apparatus for cleaning carpets, upholstery and the like comprising a separate reservoir system for supplying under pressure to a remote cleaning head a heated cleaning solution and a separate vacuum pick-up system for picking up via the cleaning head and storing cleaning solution applied to a carpet or the like. The reservoir system includes means to continuously heat the cleaning solution in the reservoir and a fluid pump and an air pump driven by an electric motor. The vacuum system includes a vacuum pump which is driven by a second electric motor on an electrical circuit separate and distinct from that of the motor in the reservoir system. Both motors are of a size and design that they may be separately started up and operated at full load on separate residential



electrical circuits without blowing the fuses for these circuits. The vacuum system may also include means for directing the heated air exhausted from the vacuum pump onto the material being cleaned to facilitate drying.

3,774,263

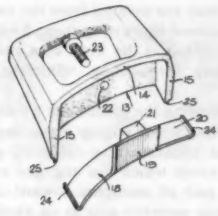
HANDLE ASSEMBLIES FOR ARTICLES OF HOLLOW-WARE

John Anthony Day, Kinver, and John Melville Graham Powell Vaughan, Stourbridge, both of England, assignors to Healey Mouldings Limited, Oldburg, Worley, England

Filed Nov. 15, 1971, Ser. No. 198,754

Int. Cl. A47b 95/02

U.S. Cl. 16—114 **2 Claims**



A handle assembly for an article of hollow-ware includes a handle in the form of a one-piece moulding of a synthetic plastics material which provides a handgrip portion and an attachment portion. The attachment portion is formed with a recess to receive an attachment bracket for fastening to the article and the recess is bounded by an upper flange and a pair of side flanges.

3,774,264

APPARATUS FOR BREAKING ANIMAL CARCASSES AND HANDLING MEAT PRODUCTS

A. D. Anderson, Sioux City, Iowa; Walter E. Lauridsen, South Sioux City, Nebr., and Charles L. Overstreet, Sioux City, Iowa, assignors to Iowa Beef Processors, Inc., Dakata City, Nebr.

Division of Ser. No. 706,557, Feb. 19, 1968, Pat. No. 3,593,369. This application July 15, 1971, Ser. No. 163,002

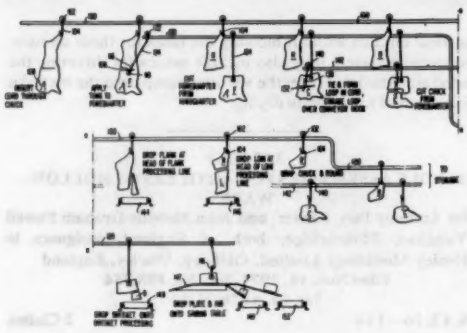
Int. Cl. A22b 7/00

U.S. Cl. 17—1 R **16 Claims**

An integrated facility for breaking dressed animal carcasses includes a continuous flow of the carcasses and their subdivisions through a series of processing areas where the carcasses are broken into primal cuts, the primal cuts are further divided, boned and trimmed along processing lines designated for particular primal cuts, the secondary cuts thus produced are then trimmed and boned as necessary, packaged and sorted according to their weight. Groups of the secondary cuts are placed in boxes which carry machine-readable markings which indicate the box contents. The filled receptacles are carried by a common conveyor to an area where they are sorted into groups according to the machine-readable markings, palletized by groups and placed on unidirectional

refrigerated storage conveyors. Orders for products are filled by discharging the pallets from their respective storage conveyors, depalletizing the goods and routing the boxes to designated transport vehicles. A constant inventory of boxed products is maintained by automatically reading the markings on the boxes and weighing the boxes both before and after they pass through the storage conveyors.

Suspended carcasses are broken into primal cuts by moving them through a series of stations where portions are removed Large portions such as forequarters of beef are transferred to a conveyor which suspends them from a pair of tongs. Beef chucks may be supported on a looped cord which passes



therethrough as they are severed from the carcass. Other portions may be removed by cutting them from the carcass and permitting them to fall at the head of a conveyor which has stations therealong for cutting, trimming, packaging and weighing meat.

Tongs for suspending the meat have a pair of opposed relatively movable plates which engage opposite sides of the meat.

A method and apparatus for releasing portions of meat suspended from cords which are engaged on hooks involves movement of a pair of members toward and beyond each other, whereby one member acts as an abutment to hold the hook in a desired orientation and the other member pushes the cord and the meat from the hook.

3,774,265

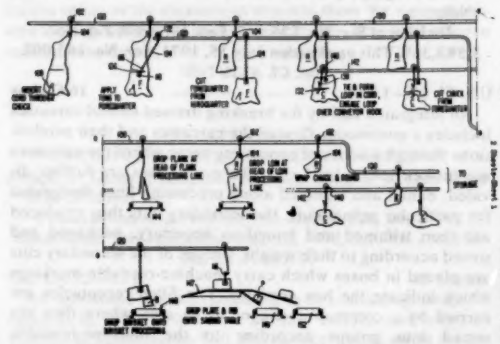
METHOD AND APPARATUS FOR BREAKING ANIMAL CARCASSES AND HANDLING MEAT PRODUCTS

A. D. Anderson, Sioux City, Iowa; Walter E. Lauridsen, South Sioux City, Nebr., and Charles L. Overstreet, Sioux City, Iowa, assignors to Iowa Beef Processors, Inc., Dakota City, Nebr.

Division of Ser. No. 706,557, Feb. 19, 1968, Pat. No. 3,593,369. This application July 15, 1971, Ser. No. 165,787

Int. Cl. A22b *7/00*

U.S. Cl. 17—24 **3 Claims**



A method and apparatus for releasing portions of meat suspended from cords which are engaged on hooks involves movement of a pair of members toward and beyond each other, whereby one member acts as an abutment to hold the hook in a desired orientation and the other member pushes the cord and the meat from the hook.

3,774,266

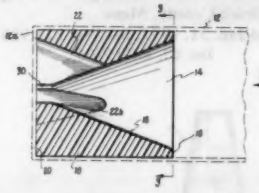
MIXING GLAND FOR STUFFING MEAT DOUGH

Paul F. Good, Lutherville, Md., assignor to Speedco, Inc., Baltimore, Md.

Filed June 25, 1971, Ser. No. 156,657

Int. Cl. A22b *5/00*

U.S. Cl. 17—41 **4 Claims**



A mixing gland positioned at the outlet end of a meat dough stuffing horn having slots for mixing the discharged dough to eliminate defects in finished meat products such as entrapped air pockets, two-tone color differences and swirl impressions.

3,774,267

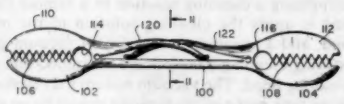
STOCKING PAIR RETAINER

Vincent R. Sneider, 3422 Hallcrest Drive, Atlanta City, Ga.

Filed Aug. 23, 1972, Ser. No. 283,103

Int. Cl. A44b *21/00*

U.S. Cl. 24—81 D **4 Claims**



This invention pertains to a low cost retaining member disposed to receive and retain a pair of socks during the time that they are washed in a washing machine and without removing this pair from said retaining member the pair of socks are dried as by an automatic dryer and the like. After drying, the socks, still retained by this member, may be hung on a nail or on a small pin until ready for removal from the retaining clip and used by the wearer of the socks. This retaining member is depicted in several modifications all utilizing a plastic molded member of low cost, the plastic having deterioration resistance to washing soaps and the like and also drying temperatures.

3,774,268

PUSH-BUTTON LOCK FOR SAFETY BELTS

Gote Eskil Yngve Holmberg, Anderstorp, Sweden, assignor to G.L.Y.-Patenter Aktiebolag, Postlada

Filed Apr. 12, 1972, Ser. No. 243,378

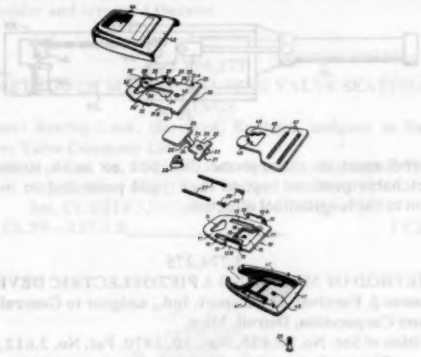
Claims priority, application Sweden, Apr. 13, 1971, 4746/71

Int. Cl. A44b *11/26*

U.S. Cl. 24—230 A **8 Claims**

In a push-button lock for safety belts there is provided a base plate and a cover plate which is mounted on the base plate. For this mounting the base plate forms two upwardly bent marginal flanges at two opposite side margins and the cover plate forms an opening to be threaded on one of the flanges by such opening, as well as projections for engagement with said one flange from the outer side thereof and with the other marginal flange from the inner side thereof by lateral displacement of the cover plate. There is provided on the

cover plate a manually operable blocking member which may be set against the inner side of said one flange for retaining the



cover plate in a position in which it is connected with the base plate by the engagement between the projections and the flanges.

3,774,269

ELECTRIC WIRE SUSPENSION CLIP

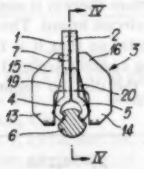
Harold Campbell, Huyton, England, assignor to British Insulated Callender's Cable Limited, London, England

Filed July 14, 1971, Ser. No. 162,500

Claims priority, application Great Britain, July 15, 1970, 34339/70

Int. Cl. A44b *21/00*

U.S. Cl. 24—250 **5 Claims**



A clip suitable for use in supporting an overhead contact wire of an electric traction system is made from a hard, resilient plastics material and comprises a pair of clamping plates having aligned apertures to receive a locking member. The clamping plates are shaped to provide co-operating clamping jaws on one side of the aligned apertures and to provide mutual abutments at least on the opposite side thereof. The locking member passes through the aligned apertures and has a first pair of limbs engageable with the clamping jaws to urge them towards one another and a second pair of limbs simultaneously engageable with outer faces of the clamping plates in the vicinity of their mutual abutments.

3,774,270

EXHAUST SYSTEM CLAMP ASSEMBLY

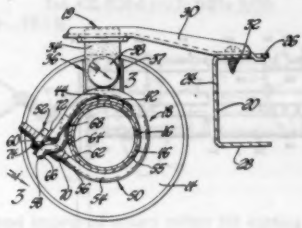
Daniel L. Bentley, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1972, Ser. No. 299,188

Int. Cl. B65d *63/00*

U.S. Cl. 24—276 **1 Claim**

A two-piece exhaust system clamp assembly includes a flexible wire clamp wrapped around an exhaust system component and having a threaded shank at one end thereof which is inserted through an eyelet formed at the other end. A shouldered nut is rotatably journalled in the eyelet and threaded over the shank to apply a clamping force about the circumference of the component.



3,774,271

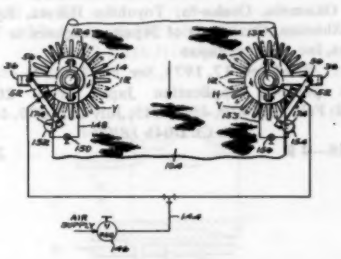
SHEET GUIDING AND WIDTH-CONTROL APPARATUS

Francis A. Depuy, and Nicholas T. Santore, both of Taunton, Mass., assignors to Mount Hope Machinery Company, Taunton, Mass.

Filed Aug. 27, 1970, Ser. No. 67,383

Int. Cl. D06c *3/06*

U.S. Cl. 26—66 **8 Claims**



Apparatus for guiding an indefinite length of sheet or web material, such a cloth, in a predetermined path, and also for controlling the width of stretchable material.

In one form, a pair of scroll rolls are driven at differentiable speeds in response to the lateral positions of one or both edges of the sheet, to guide it laterally into a desired path and to retain its proper width. For guiding non-stretchable material, one roll is driven at a predetermined speed, and the speed of the other is controlled by the position of one edge of the sheet.

A guider control system is also provided in which the exhaust rate from fluid-operated motors driving a pair of rotatable sheet-stroking means is adjusted by edge-sensing means to control the relative speeds of the rolls. This control system can also be used with selvage uncurlers of a rotary disk type.

Another guider control system employs a constant-speed motive means to drive one or both sheet-stroking means through variable-speed drive means at relative speeds controlled by the sheet-edge sensing means. The drive means may comprise variable-speed transmissions or clutches.

3,774,272

APPARATUS FOR FORMING EMBOSSED DESIGNS IN PILE FABRICS

Nathan Rubaschek, 1740 Ocean Ave., Brooklyn, N.Y., and Henry Rubinstein, 43-01 46th St., Sunnyside, N.Y.

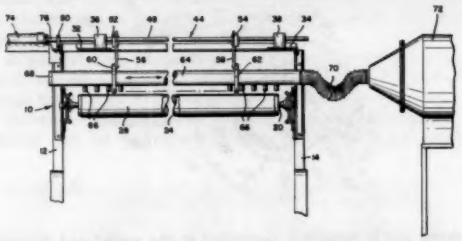
Filed June 7, 1971, Ser. No. 150,678

Int. Cl. D06c *23/00*

U.S. Cl. 26—2 R **13 Claims**

Automatic Apparatus for forming embossed zig-zag line patterns in pile fabrics in which a pile fabric is moved in one

direction and a header connected to a source of fluid under pressure and having spaced jet spray nozzles set into it is reciprocated over the fabric in a direction transverse to its line of movement. The apparatus includes mechanism for varying



the length and the pitch of the lines of the design produced and also for providing a dwell at the end of each stroke of the header to produce longitudinal embossed line sections that connect the adjacent ends of the zig zag lines.

ERRATUM

For Class 27—22 see:
Patent No. 3,774,927

3,774,273

NEEDLE FELTING APPARATUS

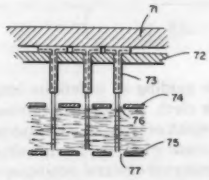
Miyoshi Okamoto, Osaka-fu; Toyohiko Hikota, Kyoto, and Kitao Shimizu, Osaka, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 17, 1971, Ser. No. 116,146

Claims priority, application Japan, Feb. 20, 1970, 45/14442; Feb. 20, 1970, 45/14443; July 15, 1970, 45/61372

Int. Cl. D04h *18/00*

U.S. Cl. 28—4 R **27 Claims**



A needle, needle punching machine and process are provided for producing a needle felted fabric that is useful for producing artificial leather. In the needled fabric some of the fibers are displaced by needles and caused to penetrate through others of the fibers; at least 60 percent of the fibers which penetrate do so either individually or as a group of 2 or 3 fibers.

3,774,274

MEANS AND METHOD FOR PRODUCING EXPANDED METAL

Harold Rex Jury, Norwood, Australia, assignor to Jury & Spiers Proprietary Limited, Norwood, South Australia, Australia

Filed July 13, 1971, Ser. No. 162,135

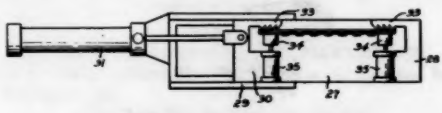
Claims priority, application Australia, July 16, 1970, 1859

Int. Cl. B21d *31/04*

U.S. Cl. 29—6.1 **6 Claims**

The invention relates to a method of producing an expanded metal product wherein the metal sections are stretched instead of being bent so as to achieve the expanding process.

The method is characterised by forming a series of parallel rows of slots each of identical size and each having curved ends, the slots of alternate rows being staggered and overlapping so as to form a series of longitudinally extending stretchable portions, the metal edges being clamped and then



moved apart in a transverse direction so as to strain the stretchable portions beyond their yield point and to incline them to the longitudinal direction.

3,774,275

METHOD OF MOUNTING A PIEZOELECTRIC DEVICE

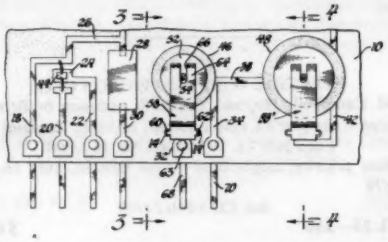
Thomas J. Furnival, Logansport, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 88,455, Nov. 10, 1970, Pat. No. 3,612,922.

This application May 28, 1971, Ser. No. 148,089

Int. Cl. B01j *17/00;* **H04r** *17/00*

U.S. Cl. 29—25.35 **1 Claim**



A thick film hybrid integrated circuit including an integrally mounted ceramic filter. A circular ceramic resonator disk having a central aperture therein is seated on a pedestal contact upstanding on a circuit board. The disk is supported on a shoulder of the pedestal so that it is free to resonate in the radial mode. A spring contact secured to the board contacts the exposed face of the disk to retain the disk against the pedestal shoulder.

3,774,276

CUTTING-OFF TOOL

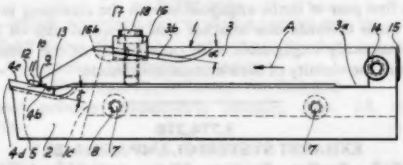
Otto Eckle, Lochgau, Germany, assignor to KOMET Stahlhalter und Werkzeugfabrik Robert Breuning GmbH, Besigham am Neckar, Germany

Filed Apr. 29, 1971, Ser. No. 138,500

Claims priority, application Germany, Apr. 30, 1970, P 20 21 200.4

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **12 Claims**



A cutting tool wherein the clamping arm is arranged so that it is movable with respect to the cutter carrier in the longitudinal direction thereof, and has at its front end a supporting surface securing the cutting body mounted for longitudinal displacement on the cutter carrier against displacement in the longitudinal direction. The clamping arm has approximately

the same length as the cutter carrier and is arranged throughout its length, with the exception of its rear end, at a distance from the cutter carrier. The rear end of the clamping arm bears against a supporting body which is adjustable by means of a setscrew extending in the longitudinal direction of the holder and arranged thereon.

3,774,277

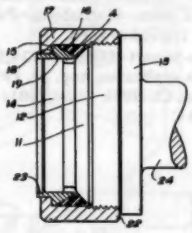
METHOD OF MANUFACTURING VALVE SEATING RINGS

Herbert Bentley-Leek, Hereford, England, assignor to Saunders Valve Company Limited

Division of Ser. No. 704,366, Feb. 9, 1968, abandoned. This application Aug. 18, 1972, Ser. No. 281,991

Int. Cl. B21d *53/00*; **B21k** *29/00*; **B23p** *15/02*

U.S. Cl. 29—157.1 R **1 Claim**



The specification of this application discloses a novel method of ensuring accuracy of the sealing surfaces of a plug cock seating ring by compressing an oversize molded ring in a jig providing surfaces simulating those to which the ring is to seal in use.

3,774,278

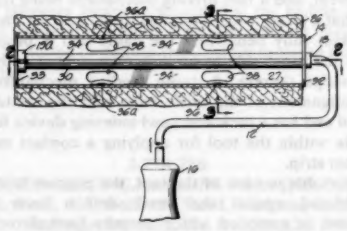
PAINT ROLLER AND FRAME

George Ashton, Studio City, Calif., assignor to Ideal Brushes, Inc., North Hollywood, Calif.

Filed Feb. 7, 1972, Ser. No. 223,942

Int. Cl. B44d *3/28*

U.S. Cl. 29—116 R **3 Claims**



A paint roller assembly for supporting a replaceable paint roller cover consisting of a hand-held frame adapted to rotatably carry a unitary support member constructed of a moldable plastic material. The support member has a central body portion and a plurality of elongated radially extending rib members, at least one of which is provided with radially yieldable protrusions on its outer margin adapted to frictionally engage the replaceable cover and hold it in place on the paint roller assembly.

3,774,279

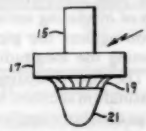
RADIUS CUTTER

Herbert F. Hunter, 1800 Neptune Way, Sacramento, Calif.

Filed June 27, 1972, Ser. No. 266,812

Int. Cl. B26d *1/12*; **B27c** *5/00*

U.S. Cl. 29—103 R **1 Claim**



A new and improved rotary cutter for cutting a radius on the edges of material requiring either open or closed bevels as well as changing bevels. A tapered guide in the form of a sleeve is located tangent to the lower edge of the shaped cutter teeth allowing the material or tool to tilt relative to one another such that the proper radii can be completely and accurately machined on the material having edges of varying angular configuration with only one or two passes of the cutter.

3,774,280

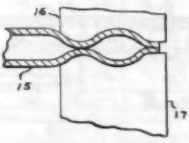
METHOD OF FABRICATING HOLLOW BALLS FOR USE IN ROLLING CONTACT BEARING APPLICATIONS

Phillip R. Eklund, Dayton, and Gabe L. Campbell, Greenville, both of Ohio, assignors to the United States of America as represented by the Secretary of the Air Force by said Campbell

Filed July 18, 1972, Ser. No. 273,004

Int. Cl. B21h *1/14*; **B23p** *11/00*

U.S. Cl. 29—148.4 B **10 Claims**



Means for fabricating a seamless hollow ball by initially spin-forging a metal tube into a non-spherical structure that is hollow and closed except for a pair of equatorial or diametral openings, and thereafter simultaneously and progressively shaping the initially formed structure into a spherical hollow ball and eliminating the openings by a controlled plastic deformation resulting from pressure or forge-welding the structure by the application thereto of a series of hot forging operations.

3,774,281

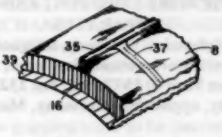
METHOD OF INSULATING A PIPELINE

Kay E. Eliason, Fort Madison, Iowa, assignor to Atlantic Richfield Company, New York, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,630

Int. Cl. B21d *53/00*

U.S. Cl. 29—157 R **8 Claims**



An insulating section and a method for insulating a length of pipe in northern regions subsequent to installation of the pipe is provided by a prefabricated pipe insulation system comprising (a) forming a cylindrical metallic outer jacket longitu-

dinally flanged for seaming, (b) applying a layer of synthetic insulating foam to the interior of the outer jacket thereby forming insulating sections of insulating material adhering to an outer jacket, (c) placing said sections end-to-end longitudinally and circumferentially along the length of pipe, (d) providing batten straps, adaptable to mating with the longitudinal seam, around the pipe circumference and extending between adjacent seams of insulating sections, and (e) securing the insulating section against the pipe and the circumferential battens by forming the longitudinal seam which incorporates the battens. The pipe insulating system provides a means of forming pipe insulation sections in a mobile unit near the pipe location and is particularly applicable in northern regions to insulate newly laid or existing pipelines.

3,774,282

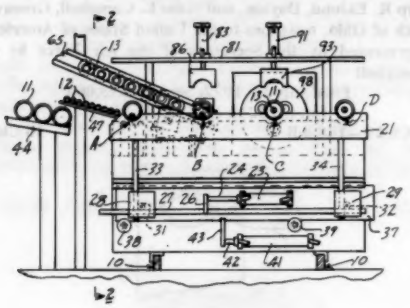
APPARATUS FOR ASSEMBLYING IDLER ROLLS AND THE LIKE

Homer Hooper, Winfield, Ala., assignor to Continental Conveyor and Equipment Company, Winfield, Ala.

Filed Sept. 5, 1972, Ser. No. 286,036

Int. Cl. B23p *19/04*, *19/00*

U.S. Cl. 29—201 **9 Claims**



A machine for assemblying and heading idler rolls and the like, which rolls embody a tubular shell, a head in each end of the shell and preferably, a centrally disposed grease tube connected at each end to centrally disposed openings on the inner sides of the heads. The apparatus embodies means to place a grease tube in the outer shell, means to position the heads adjacent the ends of the shell, mandrels which enter the shell from both ends, passing through the heads and entering the grease tube to center the heads and tube relative to the shell, and means to press the parts together. At another work station the ends of the shell are rolled or formed over, thus to secure the parts together. The machine is adjustable to fabricate rolls of different lengths.

3,774,283

AUTOMATIC WIRE STRIPPING AND WRAPPING APPARATUS

Bruno Staiger, Erligheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

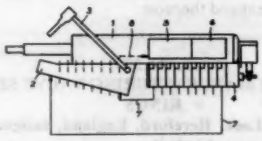
Filed Mar. 7, 1972, Ser. No. 232,415

Claims priority, application Germany, Mar. 12, 1971, P 21 12 024.1

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 D **3 Claims**

An attachment for a wire stripping gun whereby jumper wires are automatically advanced, stripped and cut. A pneumatically controlled transfer unit including two pistons and clamping jaws advances wire from a supply reel to a cutting die actuated by a pneumatically controlled piston. Pneumatically controlled pivoted spring fingers grip the wire advanced through the cutting die and position it adjacent the gun whereby the wire may be stripped and wrapped.



3,774,284

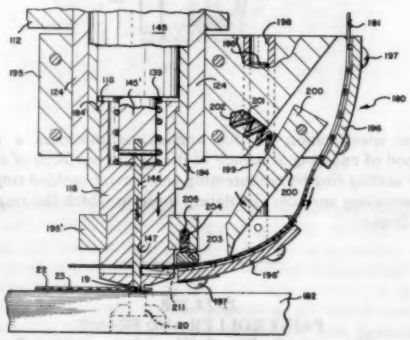
TOOL FOR SECURING CONTACTS TO FLAT MULTI-CONDUCTOR CABLE

Harold Edwin Cootes, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 224,548, Feb. 8, 1972, abandoned. This application Aug. 23, 1972, Ser. No. 283,149

Int. Cl. H05k *13/04*; H01r *43/00*

U.S. Cl. 29—203 C **26 Claims**



A tool for securing contacts to flat multi-conductor tape-like cable features a contact holder having a feeding path for the contact to control the width thereof during attachment to the cable, a ram reciprocably movable in the holder, an anvil disposed adjacent the contact holder at the end of the feeding path therein, and a ram driving mechanism being operable to assure that a given force is applied to the ram for insuring that the contact fully penetrates the cable and is properly bent back on the other side to provide engagement with the conductor strips therein. A cable feeding mechanism insures proper alignment of the cable edge with the contact holder and anvil and has a rack and pawl indexing device for shifting the cable within the tool for applying a contact to the next conductor strip.

In a portable version of the tool, the contact holder is normally biased against the anvil, and a lever camming mechanism is provided which permits limited reciprocable movement of the contact holder for inserting a cable into position between the holder and the anvil and for indexing the cable, as desired. The contacts in this version are separately and manually inserted into the contact holder.

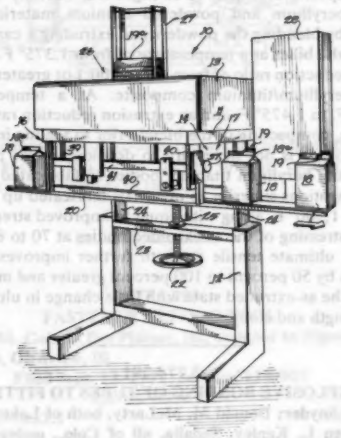
A machine version of the tool having an electrically controlled fluid-powered cylinder offers greater versatility through the provision of a rotary head carrying the contact holder and a rotary table supporting the anvil. In this version, the contacts are automatically fed from a reel and the contact holder and anvil are normally spaced apart, except during the contact-securing operation.

3,774,285

HANDLE ATTACHING MACHINE

Walter E. Hidding, 505 Banbury Rd., Arlington Heights, Ill.; Hermann Rocker, Dettingen, and Hugo Beck, Huelben, both of Germany, assignors to said Hidding, by said Rocker & Beck

Filed Feb. 1, 1972, Ser. No. 222,599
Int. Cl. B23p *19/04*; B23q *7/10*
U.S. Cl. 29—208 C 9 Claims



A handle attaching machine is provided for applying molded plastic handles to gable-topped cartons such as milk cartons or the like. The machine has an input at one end for receiving the cartons and an output at the other end to expel the cartons after handles have been applied thereto. A conveying path communicates between the input and output of the machine along which cartons are transported, and stop means are provided at separate work stations within the machine to stop transport of the cartons twice, once for punching a hole in the carton and another time for attaching a handle thereto. A magazine-loading mechanism is located on top of the machine to receive a plurality of molded plastic handles in the form of a stack of strips of such handles which are fed to a handle-applying station whereat the handles are severed from the strip and applied to the carton. The handle has bendable side portions which terminate at free ends. One of the free ends has an aperture and the other of the free ends has a deformable stem extending therefrom which passes through the aperture in the carton and the aperture of the first free end. Hammer means re provided at the handle-applying station to cooperate with the handle-applying means permanently to flatten or deform the stem for securing the handle to the carton.

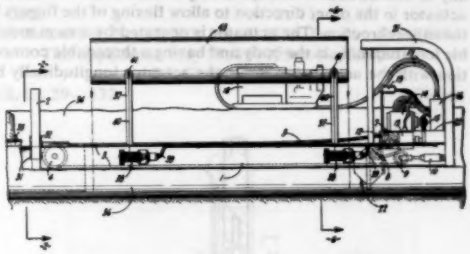
3,774,286

LINER INSERTING MACHINE FOR PIPELINES

Rodney R. Reed, 4107 Beckwith Road, Modesto, Calif.

Filed Apr. 24, 1972, Ser. No. 246,626
Int. Cl. B23p *19/04*
U.S. Cl. 29—234 8 Claims

It is a known practice to recondition long, straight runs of a large diameter, underground pipeline—as in an irrigation or sewer system—by inserting a liner pipe in each such run. This is accomplished by successively thrusting liner pipe sections into the run from an end thereof which has previously been opened for the purpose. The present disclosure is of an improved machine to accomplish such result; the machine including a frame adapted to be prepositioned in an excavation adjacent the open end of said run of the pipeline, and the frame supporting a power-actuated, reciprocable pusher head disposed—when the frame is in place in the excavation—in



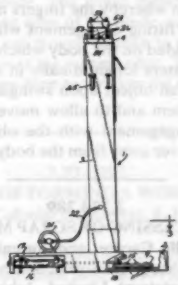
axial alinement with said open end of such run and operative to successively, forcefully thrust liner pipe sections, in end-coupled relation, thereinto.

3,774,287

HYDRAULIC PRESS

Glen V. Ireland, 6605 W. Bennett Ave., Milwaukee, Wis.

Division of Ser. No. 87,918, Nov. 9, 1970, Pat. No. 3,676,915.
This application Feb. 16, 1972, Ser. No. 226,676
Int. Cl. B23p *19/02*
U.S. Cl. 29—251 6 Claims



A hydraulic press including a frame having a base and a pair of vertical columns which extend upwardly from the base, and a cross head is mounted for vertical movement on the columns. Both the base and the columns are hollow and provide a reservoir for hydraulic fluid. The workpiece is supported on a table which is movable on the base from a loading position to a position beneath the cross head. The cross head carries a cylinder unit and the vertical position of the crosshead can be varied with respect to the columns by a cam-actuated locking unit. By releasing the locking unit and bearing the piston rod of the cylinder unit against a fixed object, the cylinder and cross head can be raised and lowered to the desired height with respect to the supporting columns.

3,774,288

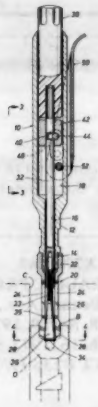
TOOL FOR INSERTING AND REMOVING PARTS IN MECHANICAL ASSEMBLAGES

Rainer Kuenzel, 9606 Meadowglen, Houston, Tex.

Filed May 21, 1971, Ser. No. 117,431
Int. Cl. B21d *39/04*
U.S. Cl. 29—282 9 Claims

A tool for use in gripping parts to be inserted in or removed from mechanical assemblages where such parts are positioned in difficulty accessible or confined locations. The tool comprises a tubular body carrying at one end an expansible or contractible gripping member having flexible fingers and mechanism for actuation of the fingers comprising an actuator member movable longitudinally relative to the fingers and

shaped for coaction with the fingers upon longitudinal movement of the actuator in one direction to flex the fingers radially in one direction and upon longitudinal movement of the actuator in the other direction to allow flexing of the fingers in the other direction. The actuator is operated by a stem movable longitudinally in the body and having a threadable connection with the actuator to move the actuator longitudinally by



rotation of the stem whereby the fingers may be adjusted into more or less close fitting engagement with the object. Lever mechanism is provided on the body which is connected to the stem to move the stem longitudinally in a direction to cause the fingers to grip an object upon swinging movement of the lever toward the stem and to allow movement of the fingers out of gripping engagement with the object upon swinging movement of the lever away from the body.

3,774,289

PROCESSING OF SCRAP METAL

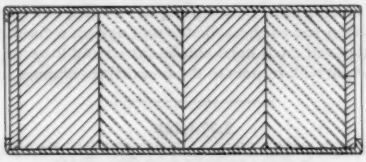
Alfredo Luigi Adolfo Cacace, and Antonino Giorgio Cacace, both of Johannesburg, Transvaal, South Africa, assignors to Antonsteel (Proprietary) Limited, Johannesburg, Republic of South Africa

Filed Sept. 9, 1970, Ser. No. 70,780

Claims priority, application South Africa, Sept. 9, 1969, 69/6388; Mar. 25, 1970, 70/2047; May 26, 1970, 70/3585

Int. Cl. B23q *17/00*

U.S. Cl. 29—403 **2 Claims**



Solid state processing of scrap metal cuttings. The cuttings are compacted, conveniently at room temperature, and then jacketed in a substantially air tight jacket. Matter, such as graphite, which gives off a reducing gas is also introduced in the jacket which is then heated so that the reducing gas reduces the surface oxides present in the scrap. The jacketed mass is then hot worked, e.g., by rolling to form a homogeneous mass.

3,774,290

METHOD OF FABRICATING A BERYLLIUM-TITANIUM COMPOSITE

Vernon L. Goodwin, Willoughby Hills, Ohio, assignor to Brush Wellman Inc., Cleveland, Ohio

Filed Feb. 9, 1972, Ser. No. 224,978

Int. Cl. B22f *3/24*

U.S. Cl. 29—420.5 **30 Claims**

There is provided a process for forming a beryllium/titanium composite of improved strength and ductility from powdered beryllium and powdered titanium material characterized by blending the powders and extruding a canister containing the billet at a temperature of from 1,375° F. to 1,525° F. to a reduction ratio of from 6:1 to 100:1 or greater to form a solid beryllium/titanium composite. At a temperature of 1,450° F. to 1,475° F. and an extrusion reduction ratio of 10:1 or more, compacting of the blend prior to sealing in an extrusion canister is not necessary to develop similar properties. Composite beryllium titanium bodies so fabricated have tensile elongations superior to materials fabricated up to and including 1,300° F. along with equal to improved strength. Tensile prestressing of the as-extruded bodies at 70 to 80 percent of their ultimate tensile strength further improves the yield strength by 50 percent to 100 percent greater and more above that of the as-extruded state with little change in ultimate tensile strength and elongation.

3,774,291

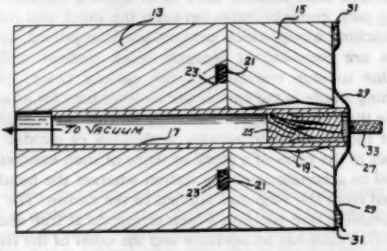
EXPLOSIVE BONDING OF TUBES TO FITTINGS

Jack T. Snyder; Donald M. McLarty, both of Lakewood, and Stephen L. Kenley, Sedalia, all of Colo., assignors to the United States of America as represented by the Secretary of the Air Force

Filed Aug. 4, 1972, Ser. No. 277,956

Int. Cl. B23p *17/00*

U.S. Cl. 29—421 **4 Claims**



A method of explosively joining tubes to fittings by first inserting the tube into a double tapered hole bored in the fitting and then positioning a close fitting wooden dowel having a charge of sheet explosive wrapped therearound in the tube under the tapered area. The double tapered cavity between the outer wall of the tube and the fitting is then evacuated by withdrawing the air therefrom and the explosive is detonated causing the tube to expand radially outward against the wall of the double tapered cavity producing a high integrity bond between the tube and the fitting.

3,774,292

METHOD AND APPARATUS FOR MODIFYING SUCKER ROD

Paul H. Clark, Jr., Odessa, Tex., assignor to Postelle Rod Service, Inc., Odessa, Ector County, Tex.

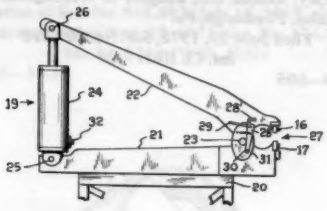
Filed Oct. 29, 1971, Ser. No. 193,669

Int. Cl. B23p *19/00*

U.S. Cl. 29—426 **3 Claims**

Method and apparatus for removing a scraper apparatus from the outer peripheral surface of a sucker rod, comprising; aligning the individual bands holding the scraper apparatus to the wall surface of the rod with a set of diametrically opposed cutting means; engaging opposed portions of the band with the

opposed cutting means and exerting a sufficient force to cause the bands to be severed along two opposed longitudinally ex-



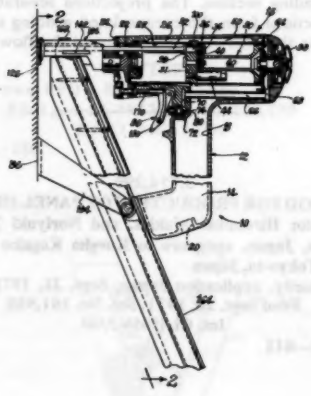
tending portions thereof, so as to release the scraper apparatus from the sucker rod. Stop means on the cutting means prevents injury or damage to the rod.

3,774,293

FASTENER DRIVING TOOL

Rudolf A. M. Golsch, Des Plaines, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Sept. 13, 1971, Ser. No. 179,902
Int. Cl. B25c 1/04
U.S. Cl. 29—432.1 **30 Claims**



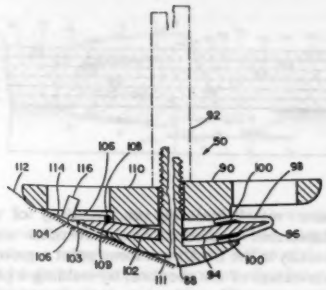
A fastener driving tool including a piston having a driving element supported eccentric to the axis thereof and reciprocated in a bore by fluid under pressure. A contactor mechanism comprises an inner portion located in the bore in the path of movement of the piston and an outer portion defining a fastener outlet alinged with the path of movement of the driving element. Where the contactor mechanism is a dimpler mechanism, the outer portion has a spherical dimpling surface surrounding the outlet and an expansive energy dissipating surface surrounding the dimpler surface. The dimpler mechanism and piston have cooperating means that cause a deceleration of the piston and an acceleration of the dimpler, rigid striking engagement between the piston and dimpler mechanism being made when their speed or velocity differential has been substantially reduced. The tool also incorporates a safety mechanism that prevents firing until the tool is in engagement with a workpiece, and includes shock absorbing means to prevent damage to the tool when inadequate back-up exists.

3,774,294

METHOD OF MAKING A RAZOR EDGE SAFETY GUARD

Gunnar P. Michelson, 505 Sea Ranch Dr., Santa Barbara, Calif.

Division of Ser. No. 52,503, July 6, 1970, Pat. No. 3,675,325. This application May 18, 1972, Ser. No. 254,571
Int. Cl. B23p 11/00
U.S. Cl. 29—432 **6 Claims**



A safety guard for the cutting edge of a razor has a multiplicity of closely spaced apart relatively thin metal filament guard members adapted to be fitted over the cutting edge of the razor or razor blade. The guard members are supported adjacent to the cutting edge of the blade, and the guard members and blade edge are moved relative to each other to bend the guard members over the cutting edge. The end portions of the guard members are then secured to the razor blade body.

3,774,295

METHOD OF FORMING A WORM SHAFT

George D. Conlee, Colonial House-Apt. 6, Highway 169 South, Humboldt, Iowa

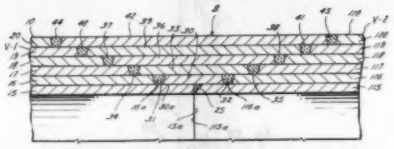
Division of Ser. No. 127,200, March 23, 1971, Pat. No. 3,736,483. This application Jan. 26, 1972, Ser. No. 220,798
Int. Cl. B23p 11/00
U.S. Cl. 29—456 **4 Claims**

The output shaft of a motor is connected directly to a worm shaft which moves a traveler connected to the door. The motor includes a second centrifugal switch in the relay coil circuit whereby the motor will stop upon the door engaging stops in either direction. The worm shaft includes a length of spiral wire locked in place on thin wall tubing rectangular in cross section. The method of producing the worm shaft includes placing the length of spiral wire on a length of cylindrical tubing and then applying pressure to the tuning between adjacent coils causing corners to be formed which lockingly engage the wire coils. A predetermined axial force in either direction on the motor will cause the motor to move relative to the traveler and actuate an interrupter switch and a reversing switch thereby stopping the motor. Upon the relay coil being reactivated the motor will then move in the opposite direction to the end of the cycle where it will then shut off and be ready to repeat the cycle.

3,774,296
METHOD OF MANUFACTURING A PRESSURE VESSEL ASSEMBLY

Eugene J. Clay, Houston, Tex., assignor to Hahn & Clay, Houston, Tex.

Filed Sept. 29, 1972, Ser. No. 293,674
Int. Cl. B23k 31/02
U.S. Cl. 29—471.3 7 Claims

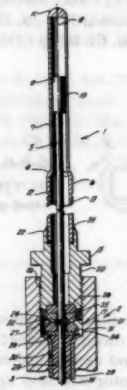


A pressure vessel assembly and method of assembly, wherein fabricated pressure vessel sections are joined together, usually in the field, or at some point remote from the point of fabrication of the sections, by welding a plurality of prestressed inserts to the adjacent sections, with the inserts being of gradually increasing widths from the inner layers outwardly and with the welds for each insert being for only a single layer to obtain maximum weld strength.

3,774,297
THERMOCOUPLE STRUCTURE AND METHOD OF MAKING SAME

Edmond M. Wagner, 457 North Lima, Sierra Madre, Calif.

Continuation-in-part of Ser. No. 82,762, Oct. 21, 1970, Pat. No. 3,741,816, which is a continuation-in-part of Ser. No. 734,512, June 3, 1968, Pat. No. 3,556,864. This application Feb. 25, 1971, Ser. No. 118,757
Int. Cl. B01j 17/00
U.S. Cl. 29—573 19 Claims

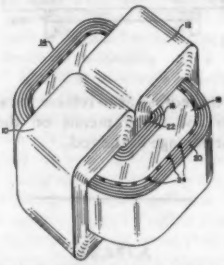


A length of metallic wire is positioned inside a length of metallic tube in approximate axial alignment with the tube and set in from one end of the tube. The open area at the one end of the tube is reduced prior to heat sealing to facilitate the seal formation. The reduction is accomplished by setting a pellet on the end of the wire, by swaging the one end of the tube onto the adjacent portion of the wire, by placing a short tight-fitting sleeve around the end of the wire, or by upsetting the end of the wire. The sleeve can be the same or a different metal from the tube.

3,774,298
METHOD OF CONSTRUCTING A TRANSFORMER WINDING ASSEMBLY

Edgar R. Eley, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 29, 1972, Ser. No. 267,290
Int. Cl. H01f 7/06
U.S. Cl. 29—605 4 Claims

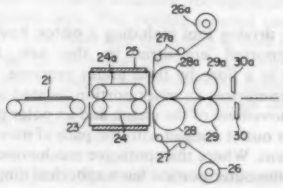


Winding sections are assembled coaxially with one of the winding sections being of the encapsulated type. The encapsulated winding section is cast in a mold having depressions thereon which form projections on the surfaces of the encapsulated winding section. The projections separate adjacent winding sections from the encapsulated winding section and form spaces therebetween which permit the flow of cooling dielectric.

3,774,299
METHOD FOR PRODUCTION OF PANEL HEATER

Masaki Sato; Hiromitsu Makita, and Noriyuki Toyota, all of Tokyo, Japan, assignors to Kureha Kagaku Kabushiki Kaisha, Tokyo-to, Japan

Claims priority, application Japan, Sept. 21, 1971, 45/81940
Filed Sept. 20, 1971, Ser. No. 181,958
Int. Cl. H05b 3/00
U.S. Cl. 29—611 3 Claims



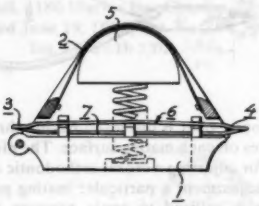
A method of producing a panel heater element by the steps of mixing carbon fiber with natural or synthetic fibers, forming the mixture into a base sheet, heat-treating the base sheet to expel volatile matter therefrom, fitting electrodes to the sheet, placing an insulative thermoplastic resin film against both surfaces of the base sheet and hot-rolling the base sheet, and finally cold-rolling the resin-coated sheet.

3,774,300

CUTTER HEAD FOR DRY-SHAVERS

Reinhard Konig, Krumpendorf, Austria, assignor to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 841,882, July 15, 1969, abandoned.
This application Aug. 25, 1971, Ser. No. 174,995
Int. Cl. B26b *19/20, 19/04*
U.S. Cl. 30—34.1 12 Claims



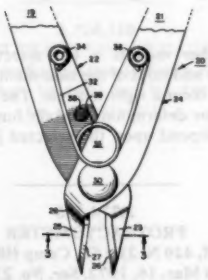
Cutter head for dry shavers having a cutter head frame and a stationary upper cutter and reciprocating driven lower cutter resiliently pressed against the upper cutter. The upper cutter forms a resilient frame and has cutter teeth and the upper cutter is clamped to the cutter head frame under initial stress and with slight curvature concave towards the lower cutter.

3,774,301

CUTTERS

Frank R. Brown, RFD 1, Ellsworth, Maine

Filed Jan. 24, 1972, Ser. No. 220,179
Int. Cl. B26b *17/04*
U.S. Cl. 30—186 4 Claims



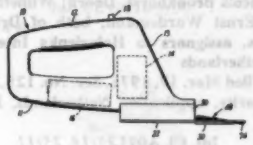
Two cooperating arm members, formed from lightweight sheet metal stampings and each incorporating a ramped blade section and a handle portion, are pivotably interconnected along a pivot axis with the sharp cutting edges of the blade sections axially spaced apart from each other to assure overlapping of the blade cutting edges, thereby forming a unique cutter specifically applicable to shearing of small diameter wires, fibers, plastics, and the like. By providing cutters whose cutting edges are axially spaced apart, the cutting edge of one of the ramped blade sections contacts the other ramped blade section and slidingly advances thereon, providing assurance that a particular item is completely cut, even when the cutting edges of the blades have been dulled from use.

3,774,302

POWER DRIVEN GRASS SHEAR

Paul A. Ketchpel, Jr., Simsbury; Carl C. Stoutenberg, Avon, and Edward J. Johnson, New Britain, all of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Jan. 4, 1972, Ser. No. 215,358
Int. Cl. B26b *19/12*
U.S. Cl. 30—210 17 Claims



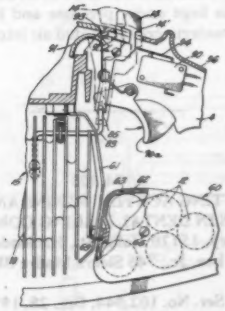
A shear for grass and the like includes a tooth plate on which is pivotally mounted a plurality of shearing members, each including a narrow and resiliently deformable blade element. The blade elements extend outwardly along the upper surface of the tooth plate, and each oscillates across one of the cutting recesses that are defined between adjacent teeth at one end of the plate. The outer ends of the blade elements are biased toward the tooth plate causing substantially point contact to exist between the cutting edges of the blade element and the side edges of the teeth as the blade elements wipe thereover. Preferably, the shear is power driven, and most desirably energy is supplied by a battery housed within the body thereof.

3,774,303

CHAIN SAW STARTING SYSTEM

Wilford B. Burkett, Pacific Palisades, and Robert V. Jackson, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Continuation of Ser. No. 92,643, Nov. 25, 1970, abandoned, and a continuation-in-part of Ser. No. 13,806, Feb. 24, 1970, abandoned, and a continuation-in-part of Ser. No. 739,798, June 25, 1968, Pat. No. 3,497,706, and a continuation-in-part of Ser. No. 543,583, April 19, 1966, Pat. No. 3,405,293. This application Aug. 15, 1972, Ser. No. 280,752
Int. Cl. B27b *17/00*
U.S. Cl. 30—382 2 Claims



Method and apparatus for effecting one hand controlled starting of a portable chain saw. By manipulating one hand, and while gripping a chain saw hand grip means, an engine is first concurrently conditioned for starting and caused to operate at a reduced engine compression. After the engine is

started, and while continuing to grip the hand grip means, the starting condition is terminated and the compression of the engine is increased for normal operational purposes.

3,774,304

APPARATUS FOR DRAINING AND DENSIFYING CURD

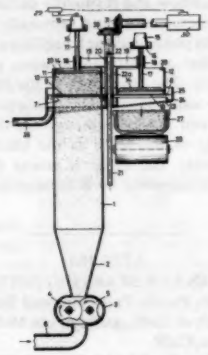
Armand Francois Bronkhorst, Doorn; Wilhelm Ludwig Heinrich, and Ernst Wurdemann, both of Driebergen, all of Netherlands, assignors to Holvrienka International N.V., Utrecht, Netherlands

Filed Mar. 17, 1971, Ser. No. 125,217

Claims priority, application Netherlands, Mar. 18, 1970, 7003851

Int. Cl. A01j *25/13, 25/11*

U.S. Cl. 31—46 3 Claims



A mixture of whey and curd is pumped into a vertical channel and thence into a substantially contiguous curd vessel against the action of a weighted piston movable in said vessel. Unlike previously proposed arrangements, the channel is imperforate except at the junction between the channel and the curd vessel, where whey is continuously allowed to drain off. When the curd vessel has been filled, a rotating cutter plate cuts off the slice of curd in the curd vessel from the remaining curd ribbon in the channel and then froms a supporting bottom for the curd vessel as it is rotated to an unloading position. The curd is thus kept under pressure and is not allowed to relax and draw bacteria-contaminated air into it.

3,774,305

THERMOSETTING ACRYLIC RESINS AND THEIR USE AS BINDERS IN DENTAL FILLING COMPOSITIONS

Donald G. Stoffey, 15120 Hollis St., Hacienda Heights, Calif., and Henry L. Lee, Jr., 745 Sierra Madre Blvd., San Marino, Calif.

Division of Ser. No. 102,044, Dec. 28, 1970, Pat. No. 3,721,644. This application July 14, 1972, Ser. No. 272,061

Int. Cl. A61k *5/02*

U.S. Cl. 32—15 8 Claims

Bisphenol-A-bis(2,3-dimethacrylatopropyl ether) and the adduct of methacrylic acid and triglycidyl ether of trihydroxy biphenyl are utilized as binders for dental restorative compositions.

3,774,306

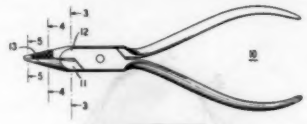
MULTIPLE PURPOSE ORTHODONTIC PLIERS

Richard Wendell Dobyns, 1351 Graymill Dr., Scotch Plains, N.J.

Filed May 30, 1972, Ser. No. 257,945

Int. Cl. A61c *7/00*

U.S. Cl. 32—66 6 Claims



An orthodontic plier is disclosed having three distinct surface curvatures on each mating surface. The pliers are particularly helpful for adjusting a crozat orthodontic appliance. During such an adjustment a particular mating pair of opposing plier surfaces is utilized to apply pressure to a particular curved section of the crozat appliance. Each of the curved surfaces of the pliers are arranged to mate perfectly with a particular curved surface of the appliance in order to perform the desired adjustment manipulation.

3,774,307

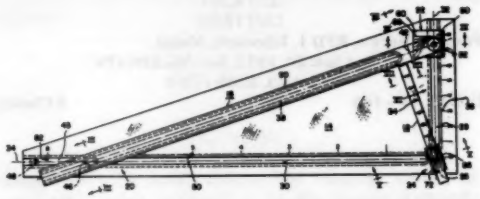
GAUGE

Joseph T. Yovanovich, 1415 Orchard Way, Rosemont, Pa.

Filed Mar. 24, 1972, Ser. No. 237,651

Int. Cl. G06g *1/00*

U.S. Cl. 33—1 SB 8 Claims



A base member mounts a bar selectively positionable thereon. The bar and sides of the base member normal to each other conjointly form a right triangle. The base member also mounts means for determining certain functions of the right triangle which depend upon the selected position of the bar member.

3,774,308

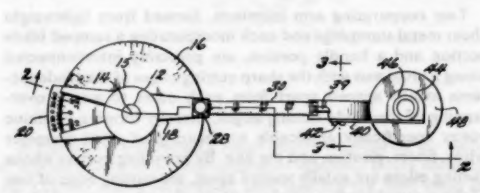
PROTRACTOMETER

Jerold Jurentkuff, 420 N. 21st St., Camp Hill, Pa.

Filed Mar. 16, 1972, Ser. No. 235,175

Int. Cl. B43l *13/00*

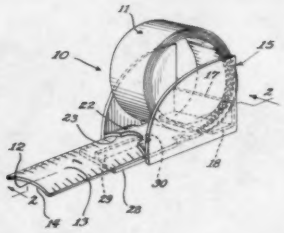
U.S. Cl. 33—75 R 5 Claims



A drafting instrument including an angulation device which is located by use of a reticle and oriented by use of a protrac-

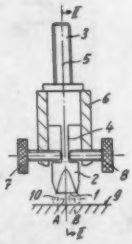
tor and to which is pivotally connected a scaling device. The scaling device includes an extendable scaling tape which is carried in a tape dispenser under the tension of a spring motor. Both the angulation device and the scaling device may be associated with elements fabricated of magnetic material which enable fixing either device to a drafting surface which also includes magnetic material.

3,774,309
STEEL MEASURING TAPE HOLDER
Norbert Leopoldi, 4180 Marine Dr., Chicago, Ill.
Filed June 19, 1972, Ser. No. 264,300
Int. Cl. G01b *5/02, 3/10*
U.S. Cl. 33—138 **8 Claims**



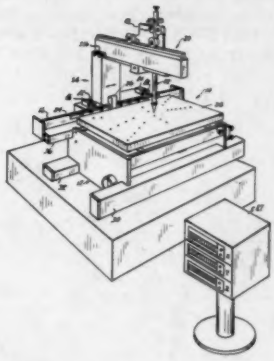
A steel measuring tape holder for a self-winding coiled steel tape of conventional design wherein the holder is of simple design readily fabricated of plastic but capable of being made of other materials and adapted to contain the coiled steel tape and permit ready uncoiling of the tape in the withdrawal thereof out of the holder for measuring while guiding the tape for extension in a straight line through a guide opening contoured in conformity with a curved face of the tape on one side and having a complemental guide member at the opposite side of the tape to initiate the straight line withdrawal of the tape from the holder and having a projecting guide lip which limits retraction of the tape and enables easy grasp of the tape for withdrawal from the holder.

3,774,310
FEELER FOR LINEAR GAUGE
Johann Meier, Brione Sopra Minusio, Switzerland
Filed Sept. 14, 1971, Ser. No. 180,418
Int. Cl. G01b *5/25*
U.S. Cl. 33—169 R **4 Claims**



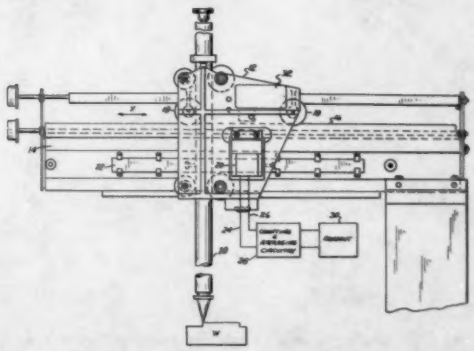
In a linear gauge having a feeler head, a feeler clamping part and an intermediate piece between the same, the cross-section of said intermediate piece is such that the feeling surface of the feeler head is pivotable in at least one direction with respect to the longitudinal axis of the feeler. The feeler clamping part includes clamping means adapted to adjust and fix the feeler head in a specific attitude with respect to the longitudinal axis of the feeler.

3,774,311
CARRIAGE AND BEARING ARRANGEMENT FOR A MEASURING MACHINE
James M. Stemple, Springfield, Ohio, assignor to The Bendix Corporation, Southfield, Mich.
Filed Mar. 1, 1971, Ser. No. 119,781
Int. Cl. G01b *3/00*
U.S. Cl. 33—174 R **6 Claims**



A measuring machine of the type having a probe supported by carriages for precision movement along the "X," "Y," and "Z" axes which features improved "spool" bearings for the carriages and probe to minimize way machining costs, and/or the number of bearing adjustments and their total number and also featuring an improved X-axis carriage geometry and bearing support arrangement to minimize overall machine size and deflections caused by traversing of the probe in the "Y" plane.

3,774,312
COORDINATE MEASURING MACHINE
Robert E. Esch, Dayton, Ohio, assignor to The Bendix Corporation, Southfield, Mich.
Filed June 30, 1971, Ser. No. 158,233
Int. Cl. G01b *3/22, 5/20*
U.S. Cl. 33—174 L **4 Claims**



A coordinate measuring machine is disclosed of the type having a measuring probe traversed along coordinate axes by means of bearing supported carraiges with means for indicat-

ing the position of the probe by measuring the corresponding position of the carriages, the improvement consisting of means for impressing a vibratory movement on each carriage having a component along the direction of motion combined with an averaging arrangement for indicating the average position of each carriage so as to eliminate the non-correspondence between movement of the probe and movement of the carriage caused by bearing friction inducing structural deflection of the parts.

3,774,313

APPARATUS FOR CHECKING GEAR TEETH AND THEIR ANOMALIES

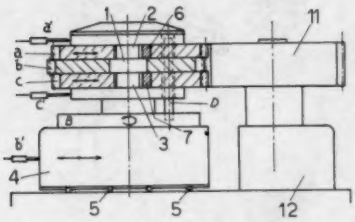
Carlo Occhialini, and Claudio Tattini, both of Bologna, Italy, assignors to Samputensill S.P.A., Bologna, Italy

Filed July 1, 1971, Ser. No. 158,954

Claims priority, application Italy, July 2, 1970, 3476 A/70

Int. Cl. G01m *13/02*

U.S. Cl. 33—179.5 B **6 Claims**



Apparatus for checking gear teeth and their anomalities, which comprises a specimen gear including at least three toothed wheels. A gear which is to be checked and in mesh with the wheels. The wheels are placed one on top of the other, and are free to rotate together or individually, in order to check anomalies present in the gear to be checked.

3,774,314

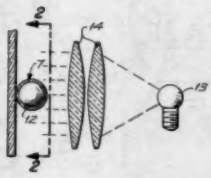
BALL INCLINOMETER

Homer S. Youngs, 8718 Dunaway Dr., San Diego, Calif.

Filed June 3, 1971, Ser. No. 149,521

Int. Cl. G01c *9/10, 9/32*

U.S. Cl. 33—348 **15 Claims**



An inclinometer in which a ball is movable in a curved tube or between plates forming concentric spherical zones, the ball as well as the tube or plates being transparent and form part of an optical system wherein a position indicating image, resulting in the passing of light through the ball, is produced on a viewing surface.

3,774,315

PROCESS AND APPARATUS FOR COOLING HOT BRIQUETTES

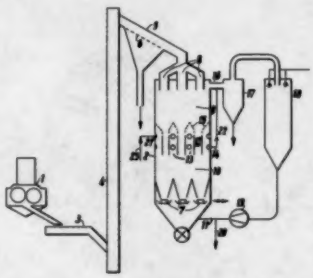
Paul Schmalfeld, Bad Homburg; Helmut Hahn, Hanau; Joachim Lehmann, Essen-Haarzopf, and Kurt Kleisa, Essen-Frintrop, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft Bergwerksverband GmbH, Frankfurt/Main, Germany

Filed Mar. 24, 1972, Ser. No. 237,813

Claims priority, application Germany, Apr. 1, 1971, P 21 15 838.3

Int. Cl. F26b *7/00*

U.S. Cl. 34—13 **6 Claims**



Hot briquettes travel through a shaft cooler as a packed layer under the force of gravity and countercurrent to a stream of cold inert gas. A partial stream of cooling gas is withdrawn laterally from the upper half of the cooler and is recycled.

3,774,316

AUTOMATIC TEACHING DEVICE

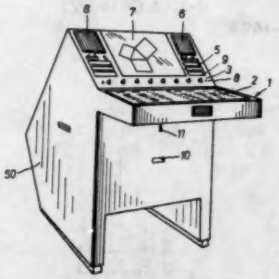
Hans Werner Meier, Bahnhofstrasse 32, Rapperswil, Switzerland

Filed May 24, 1971, Ser. No. 146,147

Claims priority, application Switzerland, May 26, 1970, 7826/70; Germany, Apr. 15, 1970, P 21 18 168.0

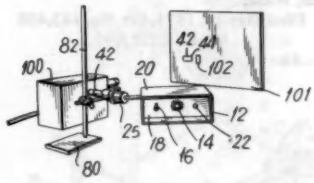
Int. Cl. G09b *7/06*

U.S. Cl. 35—9 B **16 Claims**



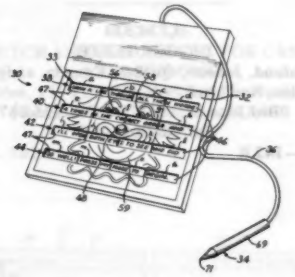
An automatic teaching device incorporating a tape recorder for playing back the instructional material and the questions and a control mechanism for checking the correctness of the answers given to the questions which have been posed. The invention contemplates providing a number of answers for each question, these answers being sub-divided into groups and arranged at an answer carrier. Each answer within a group is spatially associated with at least one answer key which is to be actuated by the student.

3,774,317
ULTRASONIC INSTRUCTIONAL KIT, METHOD AND APPARATUS
Lewis Balamuth, New York; Arthur Kuris, Riverdale, and Anthony P. Farina, Centereach, all of N.Y., assignors to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Filed Jan. 28, 1971, Ser. No. 110,401
Int. Cl. G09b *23/06*
U.S. Cl. 35—19 R 5 Claims



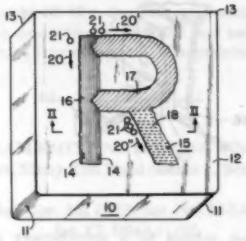
An instructional device to facilitate the teaching of physics, chemistry, and biology in the form of a number of related components including a converter for transforming normal 60 cycle per second current to an ultrasonic rate for generating mechanical viratory energy, and a plurality of accessories of various shapes and configurations designed to perform one or more demonstrations or experiments when coupled to the output end of the ultrasonic motor.

3,774,318
DIRECTIONALITY TRAINER
Graham M. Sterriti, 1202 W. Abriendo Ave., Pueblo, Colo.
Filed Nov. 1, 1972, Ser. No. 302,730
Int. Cl. G09b *17/00*
U.S. Cl. 35—35 R 16 Claims



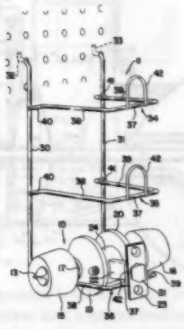
A directionality trainer trains a student to make sequential perceptual motor scribing responses in accordance with the conventions appropriate for the relevant language, e.g., in lines from left to right with the lines sequentially arranged from top to bottom. A visual-kinesthetic sequence tracing board has a plurality of stations, as in the form of metallic segments, spatially arranged in accordance with this convention. A sequencing means, such as one comprising a digital counter, has a plurality of unique output states each corresponding to a respective one of the board stations. Each time the sequencing means is actuated, it advances from one state to the next in the same sequence as the corresponding stations are arranged. As the student scribes the tracing board, a comparator compares the state of the sequencing means with the station touched by the student. A comparison signal is applied to display means which provides feedback to the student as to whether or not he is performing correctly in conventional sequence.

3,774,319
METHOD AND APPARATUS FOR TEACHING
Christopher R. Sprowls, 51 Afton Avenue, Pittsburgh, Pa.
Filed Aug. 10, 1971, Ser. No. 170,486
Int. Cl. G09b *11/02*
U.S. Cl. 35—37 2 Claims



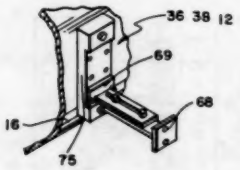
Blocklike elements are used in combination in a letter or number series for teaching handicapped and particularly blind and retarded persons and children by kinesthetic patterns. Each block has a particular letter, number or other symbol on its top face that is in the form of a recess and that has visual and physical indicia to represent and in use indicate the order of forming or making the symbol, the stroke portions involved in and the progression and direction of movement to be employed in the forming thereof. Each block also has indicia for indicating the bottom of the particular symbol and thus how the selected block should be aligned for proper reading of its indicia.

3,774,320
DISPLAY RACK FOR LOCKSETS
William M. Folberth, Jr., 3535 W. 140th, Cleveland, Ohio
Filed Oct. 20, 1972, Ser. No. 299,304
Int. Cl. G09b *25/00*
U.S. Cl. 35—49 7 Claims



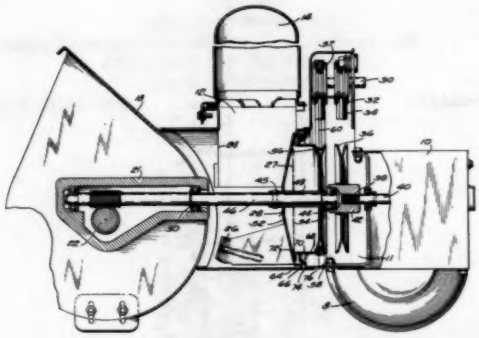
A display and demonstrator rack for cylindrical locksets of the type used on entryway doors. The rack supports a number of unpackaged, sample locksets in a manner that permits turning of the knobs to operate the knob spindle for retraction of the latchbolt as well as operation of a key or button lock mechanism when provided. The rack also includes means for securing each lockset in place to discourage removal and pilferage.

3,774,321
SNOWBLOWER ADAPTER MEANS
Leonard E. David, 7422 Galoway, Wichita, Kans.
Filed Sept. 10, 1971, Ser. No. 179,311
Int. Cl. E01h 5/00
U.S. Cl. 37—43 L 2 Claims



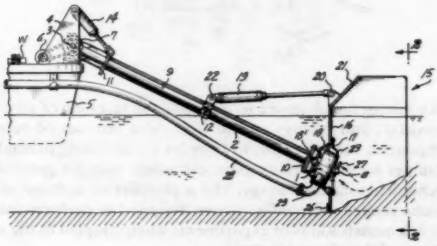
This invention relates to a snowblower adapter means operable to be attached to conventionally available lawn mower structures and having means to receive its power from such lawn mower structures. More particularly, this invention is a snowblower adapter means having rotatable blade and auger assemblies to move snow inwardly within a housing to throw the same outwardly through a discharge spout where desired. The housing assembly of the snowblower adapter assembly of this invention is designed to achieve the maximum efficiency utilizing the same in snow of a depth greater than the diameter of the blade and auger structure.

3,774,322
SNOW-HANDLING IMPLEMENT WITH BELT-DRIVEN IMPELLER AND COACTING LABYRINTHIAN BAFFLE
Edward W. Enters, Fredonia; Warren H. Price, Sheboygan, and Lynn E. Hochwitz, Plymouth, all of Wis., assignors to Gilson Bros. Co., Plymouth, Wis.
Filed Oct. 22, 1971, Ser. No. 191,736
Int. Cl. E01h 5/00
U.S. Cl. 37—43 R 13 Claims



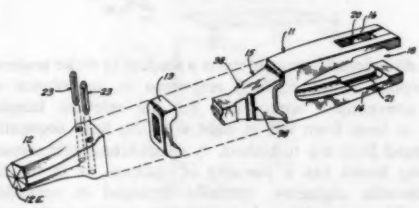
To exemplify an implement to which the invention has particular application, we are showing herein a self-propelled snow thrower in which a propulsion shaft and thrower are driven by separate belts. The thrower impeller is encircled by an annular baffle structure with which it cooperates to exclude snow from the drive compartment without requiring a bearing or frictional contact seal for this purpose. Elimination of any solid wall between the impeller and drive compartments and elimination of any driving connection between the thrower impeller and the shaft which defines its axis of roation eliminates keys, set screws and the like and reduces fabrication costs.

3,774,323
COMPOSITE BUCKET-HYDRAULIC DREDGE
James E. Vaughn, Elma, Wash., assignor to Vaughan Co. Inc., Montesano, Wash.
Filed May 14, 1971, Ser. No. 143,458
Int. Cl. E02f 3/92
U.S. Cl. 37—58 5 Claims



A chopper hydraulic centrifugal pump in one wall of a boom-mounted dipper of either the scoop or backhoe or convertible type empties the dipper automatically. Such a dipper can be self-convertible to function as a scoop or as a backhoe by having opposite end wall openings selectively closable by an unstable flip-flop, self-reversing gate.

3,774,324
DIGGER TEETH
Gilles Y. Lafond, Joliette, Quebec, Canada, assignor to Abex Corporation, New York, N.Y.
Filed June 21, 1971, Ser. No. 155,067
Int. Cl. E02f 9/28
U.S. Cl. 37—142 R 3 Claims



A two-part digging tooth for earth moving shovels, diggers and the like comprises both an adapter and a replaceable point attached thereto. The point is held on the adapter by a pair of retainer keys at opposite sides of the assembly, fitted in complemental, mated key-way slots formed in opposed surfaces of the adapter and point so that shearing action on the keys is exerted along the longitudinal axes of the keys.

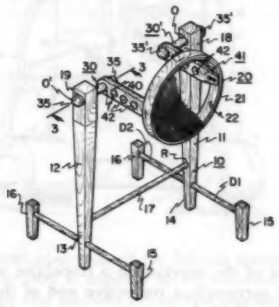
A wear sleeve may be interposed between the rear of the point and a seat on the adapter, absorbing impact loading.

3,774,325

COMPOSITE NEEDLE WORK FRAME STRUCTURE

Stephen W. Johnson; Roma B. Johnson; Susan Johnson, and Cedric E. Johnson, all of 1805 West 8660 South, West Jordan, Utah

Filed June 14, 1972, Ser. No. 262,771
Int. Cl. D05c *1/04*
U.S. Cl. 38—102.2 11 Claims



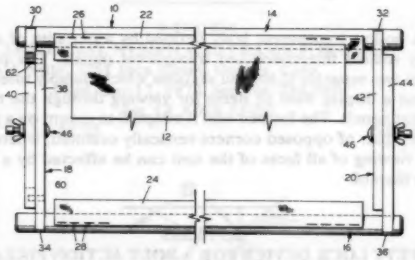
Composite needle-work frame structure incorporating a small hoop frame for embroidery and crewel-work and also a large, rectangular frame suitable for needle-point and tapestry. The composite frame structure may be designed solely for utility purposes or may be configured and made as an attractive piece of furniture. Opposite shaft structure means are advancable in and out of the journals of provided uprights so as to facilitate the mounting and securement, in desired orientation, of the small hoop frame and also of the large, rectangular frame. The shaft structures have expandable ends for facilitating releasable securement, in desired orientation, both as to their journals in the uprights and also to the mounting structure of the respective frames. Height adjustment is provided, and means are also provided for tensioning and releasably retaining fabrics being worked on the respective frames.

3,774,326

STRETCH AND ROLL FRAME FOR CANVAS NEEDLEWORK

Boynton Selden, 111 Pearl Street, West Hartford, Conn.

Filed Jan. 8, 1973, Ser. No. 321,866
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.4 10 Claims



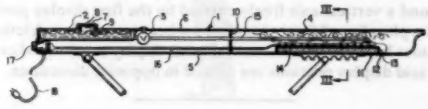
A stretch and roll frame, adapted to be used for supporting a rollable workpiece such as canvas needlework and the like thereon, comprises a first elongated frame member, a second elongated frame member, a first side frame member, and a second side frame member. The first and second elongated frame members each have attaching means provided thereon intermediate the ends thereof for detachably fastening one of the pairs of sides of a workpiece thereto. In addition, each of the first and second elongated frame members has notches formed adjacent its ends. The first and second side frame members each include adjustment means for varying the relative lengths thereof. Further, each of the ends of the first and second side frame members has a slot formed therein, which is adapted to co-operate with one of the notches formed adjacent the ends of the first and second elongated frame members for purposes of assembling the first and second side frame members to the first and second elongated frame members whereby to provide, when the first and second side frame members are so assembled to the first and second elongated frame members, a frame capable of supporting a workpiece thereon.

3,774,327

STEAM EMITTING IRONING BOARD

Roy L. Lambert, Stony Run Road (Route 1, Box 120), Westernport, Md.

Filed Apr. 18, 1973, Ser. No. 352,465
Int. Cl. D06f *81/06*
U.S. Cl. 38—104 6 Claims



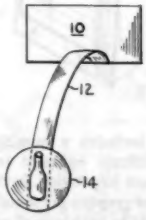
A board for steaming and brushing wrinkles from garments utilizes a built-in flash steam generator particularly designed to avoid condensate production and thus avoid water-spotting of the garment.

3,774,328

DISPLAY ARRANGEMENT

Oliver Morley Tanney, Englewood, N.J., assignor to Goodren Products Corp., Englewood, N.J.

Filed Jan. 6, 1971, Ser. No. 104,300
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 R 9 Claims



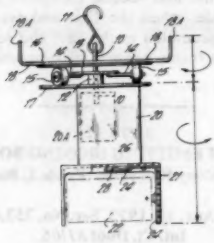
A display arrangement is which visual information or advertising matter is applied to a support portion and/or a dangling portion suspended from the support portion through a substantially elongated strip-shaped portion utilizable in shelf railings or suspension from wall surfaces and the like. The aforementioned portions of the display arrangement form an integral display member be being integrally interconnected. The strip-shaped elongated portion extends from the bottom of the substantially flat-shaped support portion in an arc-shaped configuration. The dangling portion is suspended at the bottom end of the elongated strip-shaped portion.

3,774,329

ROTATABLE DISPLAY DEVICE

Moshe Horowitz, Brooklyn, N.Y., assignor to Motion Dynamics, Inc., Brooklyn, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,050
Int. Cl. G09f 11/10
U.S. Cl. 40—33 2 Claims



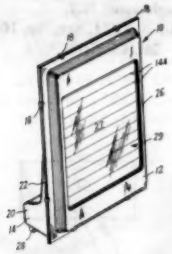
A display device for advertising purposes including an electric motor which turns a first display portion in one direction around a vertical axis freely carried by the first display portion and a plurality of freely journaled wheel members in frictional contact between the first and second display portions whereby the said display portions are turned in opposite directions.

3,774,330

PROGRAMMED DISPLAY DEVICE OR THE LIKE

Raymond H. Devanney, Winsted, Conn., assignor to Vanco, Inc., Hartford, Conn.

Filed Feb. 9, 1972, Ser. No. 224,859
Int. Cl. G09f 11/30
U.S. Cl. 40—36 22 Claims



A display device includes a number of image elements which may be selectively exposed in accordance with a predetermined program to provide, in cooperation with other such elements, several graphic presentations. A programming mechanism is provided to enable such operation, and includes a motor and transmission means for transferring drive motion from the motor to the means for moving the image elements.

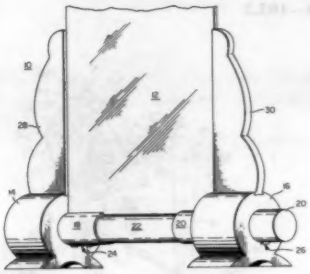
3,774,331

ADJUSTABLE PICTURE FRAME

Daniel Coelho, 1745 Selby Avenue, Los Angeles, Calif.

Continuation-in-part of Ser. No. 140,837, May 6, 1971, abandoned. This application July 31, 1972, Ser. No. 276,554
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 12 Claims

An adjustable picture frame is disclosed which includes a base support member and a tubular member whose interior surface substantially conforms to the exterior surface of the base support member. Frame base stands are provided each of which includes an aperture whose interior surface substantially conforms to the exterior surface of the tubular members. The base support member, the tubular members and the base stands are assembled such that each of the tubular members



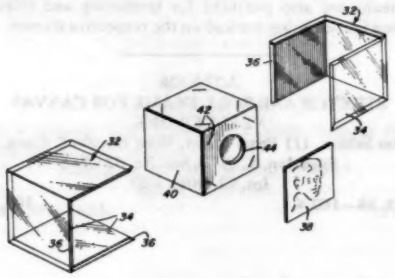
extends out of the aperture in a respective one of the base stands and surrounds a respective end of the base support member. Adjustable locking means are provided for securing the tubular member to the base support member at a selected one of a plurality of possible axial positions along the base support member.

3,774,332

DISPLAY DEVICE FOR PHOTOGRAPHS AND THE LIKE

Marshall C. Schneider, Newton Centre, Mass., assignor to Charles D. Burns Co., Boston, Mass.

Filed Mar. 23, 1971, Ser. No. 127,279
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 13 Claims



A hollow transparent body defined by a plurality of angularly related interconnected transparent panels. The panels form two separate U-shaped sections which slidably interlock about a display item or items for viewing through the transparent panels. The formed unit is adapted to mount on a stand with a pair of opposed corners vertically oriented, whereby a full viewing of all faces of the unit can be effected by a rotation thereof.

3,774,333

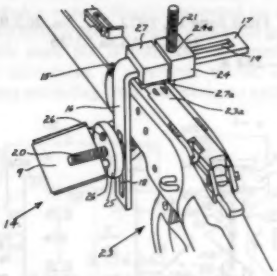
SAFETY LOCK DEVICE FOR A BOLT ACTION FIREARM

Gordon Clifford Reynolds, 81 Peel Pl., Wainuiomata, New Zealand

Filed Dec. 8, 1971, Ser. No. 206,002
Claims priority, application New Zealand, Dec. 21, 1970, 162369
Int. Cl. F41c 17/08, 27/00; E05b 73/00
U.S. Cl. 42—1 R 5 Claims

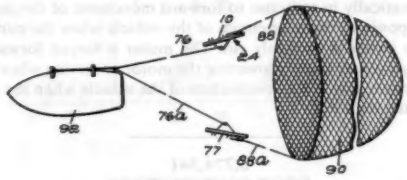
A safety device for securing a bolt or lever action firearm against being accidentally fired includes a two section clip

having mating and locking end parts. One section of the clip is moveable away from the other to open the clip. A part of one clip section is adapted to be mounted in the breech area of the



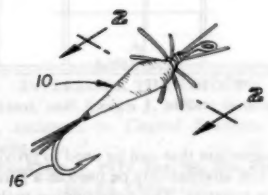
firearm to prevent operation of the breech mechanism, and the other clip section is adapted to be mounted about the firearm. The two clip sections are locked together when the clip sections are thus mounted in and about the firearm.

3,774,334
TRAWL DEVICE
Joseph Giovanni, 101 Tremont St., Boston, Mass.
Filed Aug. 31, 1972, Ser. No. 285,335
Int. Cl. A01k *73/00*
U.S. Cl. 43—9 **7 Claims**



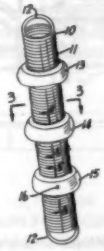
A trawl device for deep sea fishing has a board, to which a connector bracket is attached, and which extends longitudinally thereof. A brace extends diagonally from said board to said bracket, holding the latter away from the surface of the board in predetermined position.

3,774,335
ARTIFICIAL NYMPH AND FRAME FOR SAME
Edwin J. Sisty, 3751 Inca Street, Denver, Colo.
Filed May 17, 1972, Ser. No. 254,089
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.25 **3 Claims**



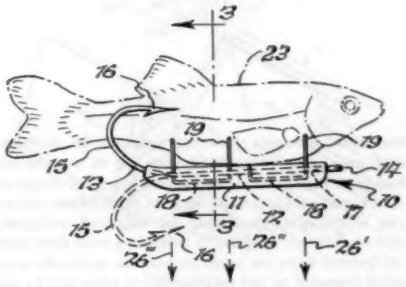
An artificial nymph comprising a flat thin frame made of wire or a thin piece of material, relatively broad as compared to its thickness from top to bottom, a hook having a shank extending longitudinally of the frame, and thread material wound on the frame and hook shank forming a flat, thin and broad body simulating a nymph. The shank of the hook may be integral with the frame or may be located above or beneath the frame preparatory to winding and tying of the body material.

3,774,336
FISHING SHOCK ABSORBER SINKER AND DRAG
Robert Dubois, Ashokan, N.Y., assignor to The Raymond Lee Organization Inc., New York, N.Y.
Filed June 1, 1972, Ser. No. 258,495
Int. Cl. A01k *91/00*
U.S. Cl. 43—42.72 **4 Claims**



A shock absorber weight sinker and drag for fishing lines that prevents abrupt shocks to the line caused by the sudden strike of a fish. The device consists of a coiled corrosion proof metal spring with doughnut shaped lead weights fastened periodically to coils along the length of the spring, together with coiled end loops for fastening at each end of the spring to the fishing line. One of the doughnut shaped weights is fixedly fastened in place to the coiled spring, while the remaining weights are free to move longitudinally along the spring.

3,774,337
LIVE BAIT FISHHOOK
Theodore J. Desbois, 423 Hyde Park Blvd., Niagara Falls, N.Y.
Filed Jan. 31, 1972, Ser. No. 222,061
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.6 **11 Claims**



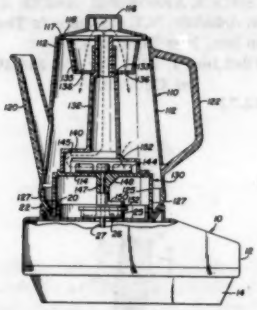
A fishhook for holding live bait comprising a shank having a longitudinal axis mounting a flexible resilient base from which a plurality of prongs extend in opposition to each other laterally of said shank. By applying a flexing force to the base, the prongs are spread apart to receive live bait therebetween and after the force is released from the base, its resilience will cause the prongs to impale the bait firmly yet gently.

3,774,338

PERCOLATOR/BLENDER TOYS

Gerald A. Waak, Manitowoc, Wis., assignor to Aluminum Specialty Company, Manitowoc, Wis.

Filed Sept. 8, 1972, Ser. No. 287,497
Int. Cl. A63h 3/52
U.S. Cl. 46—14 6 Claims



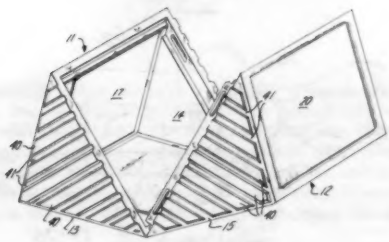
A rack and pinion gear base unit is a simulated heating unit when conjointly operated with a simulated percolator and is a simulated power unit when conjointly operated with a simulated blender. The assembled toy resembles a common kitchen appliance which simulates either the percolating action of a coffeepot or the mixing action of a blender depending on the shape and form of the receptacle for liquids.

3,774,339

HOLLOW BUILDING BLOCK

James Baldwin Swett, Barrington, R.I., assignor to Dart Industries, Inc., Los Angeles, Calif.

Filed Aug. 9, 1971, Ser. No. 170,192
Int. Cl. A63h 33/08
U.S. Cl. 46—25 7 Claims



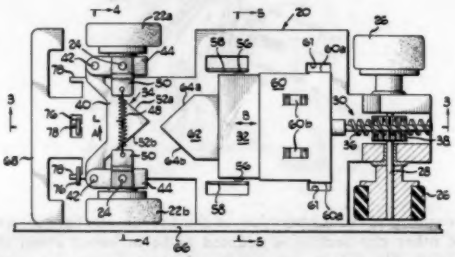
A hollow building block incorporates separable prismic sections which are hinged together preferably at an intersection of laterally extending block walls and which are attachable not only to one another, but also to other similar block sections. This versatility of attachment employing a snap-type lug and recess arrangement enables the user to create a multitude of other stable block configurations.

3,774,340

SYSTEM FOR OPERATING MINIATURE VEHICLES

Gordon A. Barlow; Norman Kramer, both of Skokie, Ill.; Derek Albert Brand, and Alexander Imatt, both of Camarillo, Calif., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed June 19, 1972, Ser. No. 263,985
Int. Cl. A63h 33/26
U.S. Cl. 46—244 A 23 Claims



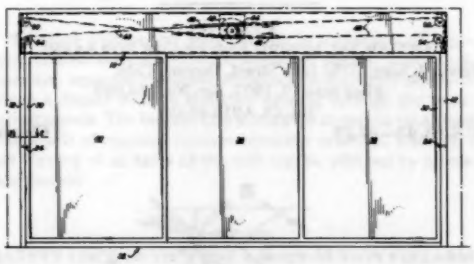
A system for operating electrically propelled miniature vehicles along a roadbed having side-by-side current conductive lanes with substantially flush tread surfaces and for remotely controlling the vehicles in a manner to turn out and pass one another at the will of the operator as the vehicles are transferred freely from one lane to another. A propulsion motor is mounted on the vehicle body by means providing limited fore and aft movement thereof relative to the vehicle body to effectively operate front steering wheels of the vehicle automatically in response to forward movement of the motor in response to the momentum of the vehicle when the current to the motor is suddenly cut. The motor is forced forwardly through a gear train connecting the motor to driving wheels of the vehicle due to the momentum of the vehicle when the current thereto is cut.

3,774,341

DOOR CONSTRUCTION

John R. Schoonover, and Patrick M. Northrip, both of 242 Perkins Avenue, Vallejo, Calif.

Filed Feb. 23, 1972, Ser. No. 228,503
Int. Cl. E05f 15/00
U.S. Cl. 49—200 3 Claims



A door construction that can be used to provide access to a chamber that can alternatively be used as a garage for a vehicle or as living quarters. The construction includes a hollow door frame that defines a door opening. A door, located in the opening, has a panel that is movable between a closed and an open position to provide access through the door when the chamber is used as living quarters. A pin, secured to each of

the opposite side ends of the door, extends into the hollow door frame and an operating mechanism, located entirely within the hollow door frame, is constructed to move the pins so as to move the door between a closed position wherein the door closes the opening and an open position wherein the vehicle may pass through the door opening. The operating mechanism includes a gear fixedly mounted to each pin, a rack, fixed to the door frame, in mesh with each gear, a lifting block, to which each pin is rotatably mounted, mounted for heightwise movement, a reversible motor, and flexible chains and cables extending from the motor to each of the lifting blocks.

3,774,342

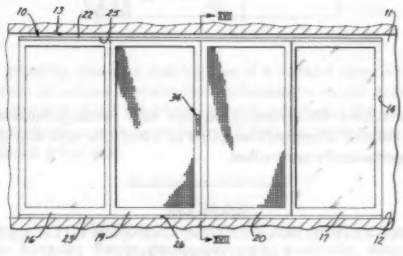
SLIDING SCREEN DOOR

Kenneth C. Thom, Birmingham, Mich., assignor to Kaufman Window & Door Corporation, Detroit, Mich.

Filed May 28, 1971, Ser. No. 147,962

Int. Cl. E05d *13/02*

U.S. Cl. 49—420 **19 Claims**



A sliding door construction having top and bottom roller units comprising a pivoted, roller carrying bar for coaction with fixed door supporting and guiding rails. A block is slidably mounted within the framework of the door below for limiting inward pivotal movement of the roller carrying bar and is adjustable by movement along a frame member of the door by a single screw for defining the inward pivotal limit of the bar. A spring outwardly biases the bar associated with each of the top roller units to urge same into firm contact with the upper rail. Sealing means on the door coact with corresponding means on adjacent doors or fixed windows and include an astrogal providing guiding, sealing and locking functions between said door and an adjacent door.

3,774,343

INTERLOCK THRESHOLD

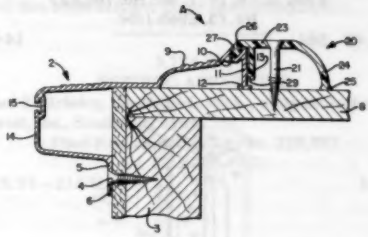
James T. Cribben, and Joseph J. Miller, both of Merchanicsburg, Pa., assignors to Capitol Products Corporation, Mechanicsburg, Pa.

Filed Dec. 9, 1971, Ser. No. 206,304

Int. Cl. E06b *1/70*

U.S. Cl. 49—467 **9 Claims**

A threshold assembly for a doorway formed of an extruded aluminum shape and a plastic shape, the two shapes being interlocked. The plastic shape defines that part of the threshold inwardly of the bottom of a door and primarily exposed to inside temperatures. The aluminum shape defines a door sill and



that part of the threshold which extends outwardly from the door and which is primarily exposed to outside temperatures.

3,774,344

CONNECTING MEANS FOR JOINING STRUCTURAL FRAME MEMBERS

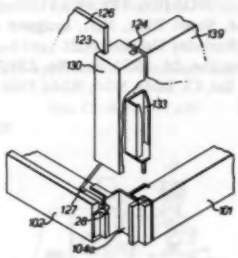
Michael W. Symons, Wissett Cottage, Hook Heath Rd., Woking, England

Filed Dec. 16, 1970, Ser. No. 98,682

Claims priority, application Great Britain, Dec. 22, 1969, 62,402/69; May 14, 1970, 23,485/70

Int. Cl. E06b *1/04*

U.S. Cl. 49—504 **4 Claims**



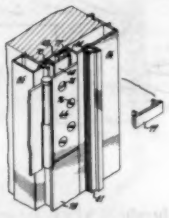
A method of securing members together and jointing member for use in the method whereby structures, particularly furniture such as knock-down wardrobes, can be built up without the use of tools by relative sliding movement in a vertical direction between the component parts. The jointing members each have a plurality of recesses therein extending in a vertical direction and the recesses are each formed by two surfaces of two webs at right-angles and an inturned flange on the outer end of each of the webs. Members to be joined together by the jointing members are each received in a respective recess thereof and have a groove in each of two faces at right-angles, which two faces lie against the two surfaces of the webs, to receive the flanges of the jointing member to secure the members against relative movement with respect to the jointing member except against relative movement in a vertical direction, that is to say longitudinally of the flange.

3,774,345

DOOR CASING ASSEMBLY

David B. Cole, Irvine, and Joseph E. Dean, Glendora, both of Calif., assignors to Modulex, Inc., Orange, Calif.

Filed July 8, 1971, Ser. No. 160,623
Int. Cl. E06b 1/04
U.S. Cl. 49—504 14 Claims



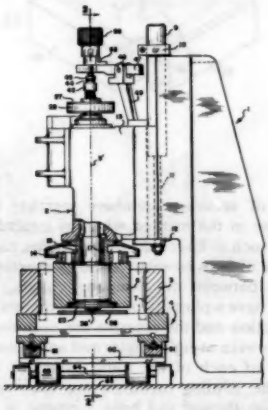
An extruded metal jamb of a door casing is formed with a channel shaped elongated support member having a pair of laterally spaced and longitudinally extending guides. A plurality of hinge leaf mounting plates are slidably mounted to the channel guides for longitudinal adjustment relative to each other and to the door jamb so that hinge leaves may be fixed to the mounting plates and the assembly of hinge leaf and mounting plate fixedly secured to the jamb. The adjustable mounting of the hingeleaves to the jamb enables much simplified installation of a door having factory mortised hinge leaves. The extruded jamb section is formed with longitudinally extending laterally spaced slots for ready securement of either a cover or a strike plate or both, so that the jamb is readily applicable to either side of the door opening. Several types of adjustable hinge leaf mounting plates and cover sections are shown.

3,774,346

HONING APPARATUS

Nils O. Heglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Filed Jan. 26, 1972, Ser. No. 220,772
Int. Cl. B24b 5/16; B24d 5/06
U.S. Cl. 51—90 6 Claims



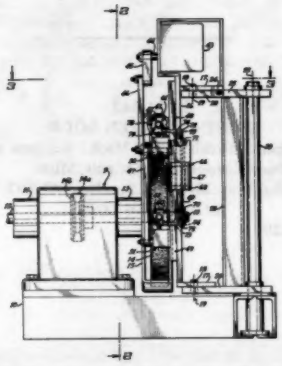
A honing apparatus for super finishing the bore surface of a machine part and particularly the epitrochoidal bore surface of the stator part of a Wankel engine. The apparatus includes mounting structure for mounting three honing stones internally of the stator for movement in the same manner as the rotor of the Wankel engine. The apparatus further includes control mechanism for moving the honing stones into and out of contact with the bore surface of the stator.

3,774,347

GRINDING MACHINE FOR GEMS

Edwin G. Marshall, P.O. Box 1745, Nogales, Ariz.

Filed May 9, 1972, Ser. No. 251,659
Int. Cl. B24b 17/00
U.S. Cl. 51—100 R 5 Claims



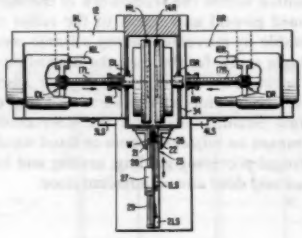
A machine for grinding square and rectangular shaped cabochons of semiprecious gems in which the size and shape are mechanically controlled.

3,774,348

HORIZONTAL DOUBLE DISC GRINDER WITH ANTI-VACUUM CONTROL

Elman R. Dunn, Roscoe, Ill., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Apr. 30, 1971, Ser. No. 138,871
Int. Cl. B24b 55/02
U.S. Cl. 51—111 R 3 Claims



A double disc abrading machine, such as a double disc grinder, which is particularly adapted for grinding opposite surfaces of thin workpieces (W), includes the injection of a metered amount of air into the coolant supplied through the spindles (13L and 13R) to eliminate a partial vacuum formed between the abrasive discs (14L and 14R). It is believed that hydrodynamic forces create a partial vacuum between the closely spaced abrasive discs (14L and 14R) which are rotated in the same or opposite directions. There may also be cohesive and/or adhesive forces acting to draw the abrasive discs (14L

and 14R) too close together. It is believed that this combination of forces and the ambient air pressure exerted on the outside of the abrasive discs (14L and 14R) causes the workpieces (W) to be ground undersize. The metered air is injected into the coolant during the grinding process to eliminate the vacuum effect. In some instances it is desirable to add supplementary unemetered air at the completion of the grinding process so that the discs may be retracted in unison at a rapid rate.

3,774,349

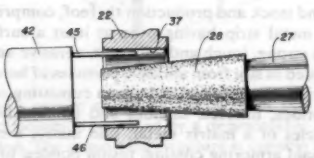
GRINDING MACHINE

Herbert Rudolf Uhtenwoldt, Worcester, and Robert Gordon Hatstat, Rutland, both of Mass., assignors to Cincinnati Milacron-Heald Corporation, Worcester, Mass.

Filed Mar. 30, 1972, Ser. No. 239,559

Int. Cl. B24b *49/04*

U.S. Cl. 51—165.91 **7 Claims**



A grinding machine making use of a conical abrasive wheel wherein provision is made for performing a rough grind with the large end of the wheel and a finish grind with the small end of the wheel, a gage being inserted into the workpiece during the finish grind only.

3,774,350

KNIFE SCABBARD OR HOLDER

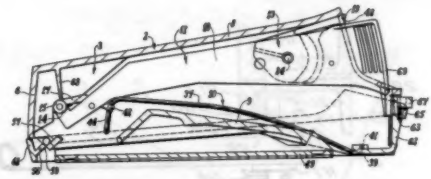
Peter Kingsley Bayly, Greensborough, Australia, assignor to Wiltshire Cutlery Company Proprietary Limited, Victoria, Australia

Filed Dec. 10, 1971, Ser. No. 206,724

Claims priority, application Australia, Dec. 24, 1970, 3,596/70

Int. Cl. B24b *3/54*

U.S. Cl. 51—204 **11 Claims**



A knife scabbard including a sharpening device mounted on a pivoted carrier member which is arranged within the scabbard so as to move the sharpening device towards and away from one side wall of the scabbard, and biasing structure urging the carrier member about its pivot towards that side wall. A latch member is connected to the carrier member adjacent to the sharpening device so as to be engaged by a knife blade as it is inserted into the scabbard, and when so engaged the latch member reacts between the carrier member and the aforementioned scabbard side wall to create a force on the carrier member opposing the influence of the biasing structure, at least during initial insertion of the knife blade into the scabbard. The latch member also defines two guide surfaces that are located on respective sides of a knife blade inserted into the scabbard, so as to resist excessive lateral tilting movement of that blade relative to the sharpening device.

3,774,351

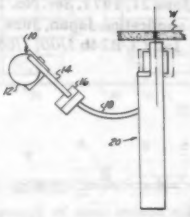
FEEDING APPARATUS

Douglas E. Brining, Southfield, Mich., assignor to Feedmatic-Detroit, Inc., Southfield, Mich.

Filed Feb. 28, 1972, Ser. No. 229,797

Int. Cl. B24b *47/20*

U.S. Cl. 51—215 H **14 Claims**



A universally adjustable attachment for sequentially feeding small parts to a machine such as a grinder including a flexible air tube through which parts are advanced to approximate loading position, and adjustable structure for placing the part in the machine.

3,774,352

ALIGNING DEVICE FOR WORKPIECES ON MACHINE TOOL TABLES

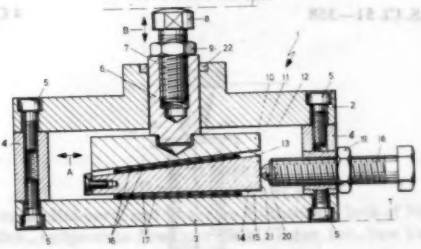
Ewald Weber, Coburg, Germany, assignor to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Hahnweg, Germany

Filed May 26, 1971, Ser. No. 147,076

Claims priority, application Germany, May 30, 1970, P 20 26 565.0

Int. Cl. B24b *41/06*

U.S. Cl. 51—238 **2 Claims**



An aligning device for workpieces on machine tool tables. The aligning device has a housing having a cover plate and a lifting ram vertically movably mounted on the cover plate and protruding out of the upper surface thereof. A pressure plate is arranged within the housing and engages the lower end of the lifting ram and has a planar wedge surface at its underside. A wedge is mounted in the housing below the lifting ram and is capable of sliding transversely of the lifting ram between the pressure plate and a base plate of the housing. The wedge has

at its top surface a wedge surface which is parallel to the first-mentioned wedge surface and a planar under surface parallel to the interior surface of the base plate. Roller bearings or ball bearings are arranged between the wedge surfaces and between the underside of the wedge and the interior face of the base plate. A set screw is mounted in the lateral wall of the housing and engages the wire end of the wedge and is adapted to move same transversely of the lifting ram.

3,774,353

METHOD FOR PARTIALLY GRINDING SURFACE FLOWS OF A HOT BLOOM AND SLAB

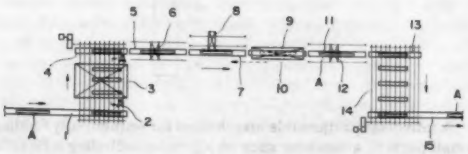
Sigeto Yasunaga; Takeru Oniki, both of Kitakyushu; Hirokazo Sumitomo, Kisarazu; Eiichi Tanaka, and Osamu Araki, both of Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed June 21, 1971, Ser. No. 154,926

Claims priority, application Japan, June 19, 1970, 45/53107

Int. Cl. B24b *1/00, 7/06*

U.S. Cl. 51—322 **6 Claims**



A method for partially grinding surface flaws of hot steel slabs including bloom, wherein the hot bloom immediately after being hot-rolled is maintained in the state most suitable for detecting surface flaws therein in the rolling line from a rolling mill to a cooling zone. The surface flaws are detected and the thus detected surface flaws are removed by grinding, while the bloom is hot.

3,774,354

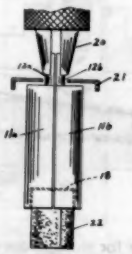
POLISHING SPINDLE

Donald M. Taylor, 2400 Mardel Court, Hamilton, Ohio

Filed Jan. 20, 1972, Ser. No. 219,279

Int. Cl. B24d *17/00*

U.S. Cl. 51—358 **4 Claims**



This invention relates to an improved polishing spindle for use with any rotary power equipment. The spindle has a slot adapted to grip the end of a strip of polishing media so that an indefinite length can be wrapped around the spindle and securely held in position.

3,774,355

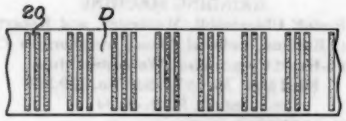
ARMORED METAL FILE BAND AND PRODUCTION THEREOF

Chester H. Dawson, Danbury; Robert T. Catlin, Trumbull, and Philip R. Haskell, Easton, all of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Continuation of Ser. No. 803,561, March 3, 1969, abandoned. This application Oct. 15, 1971, Ser. No. 189,786

Int. Cl. B24d *3/08;* **C04b** *31/16;* **C09c** *1/68*

U.S. Cl. 51—395 **6 Claims**



File band stock and production thereof, comprising: a flexible base metal strip having over at least a surface portion thereof, a strong, tough and adherent, abrasive amoring coating produced in situ from abrasive particles of hard, high melting material selected from the group consisting of metal carbides, borides, nitrides, silicides and combinations thereof, and particles of a matrix metal, said matrix metal particles being in said armoring coating, fusion bonded to each other, to said base metal strip and to said abrasive particles, and partially embedding and anchoring said abrasive particles therein with said particles projecting therefrom in the form of a series of sharp cutting edges, said armoring coating being preferably applied to said base metal strip in spaced regularly recurring pattern areas longitudinally of said strip.

3,774,356

WALL FRAME FOR A FOLDABLE STEEL BUILDING

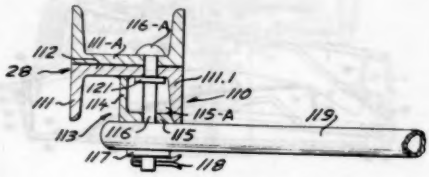
Richard Philp, Ghost Lake, Alberta, Canada, assignor to Atco Structures Inc., Anchorage, Alaska

Filed Sept. 17, 1971, Ser. No. 181,546

Claims priority, application Sweden, Dec. 31, 1970, 17839/70

Int. Cl. E04b *7/16*

U.S. Cl. 52—70 **3 Claims**



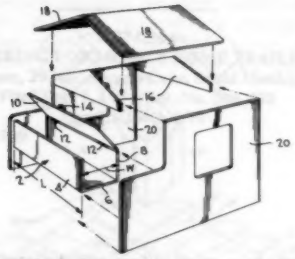
U.S. Pat. No. 3,296,752 and Canadian Pat. 723,348 issued to the present inventor in a prefabricated foldable structural steel building. The present invention provides an improved wall frame having improved means (100) to secure the wall frames to side wall columns, and an improved releasably secured means (110) securing braces to columns. These improvements permit construction of buildings with wider spans than economically practicable in the patented buildings above, and facilitate erection and dismantling.

3,774,357

CHILDREN'S PLAY GARAGE WITH SELF-CONTAINED STORAGE COMPARTMENT

Clifford J. Moore, Wheaton, Md., assignor to Misterhouse Toys, Inc., Wheaton, Md.

Filed Nov. 23, 1971, Ser. No. 201,409
Int. Cl. E04h 1/12; E04b 1/348
U.S. Cl. 52—36 11 Claims



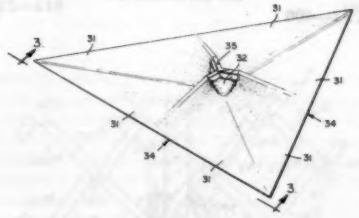
A children's garage structure where all of the horizontal strength and ridigity is provided by a demountable horizontal toybox section. The completed structure is capable of housing a tricycle, small bike, toy car, fire engine or similar vehicle. The length to width ratio of the horizontal toybox section is from 1:1 to 10:1. The toybox may be constructed of cardboard, sheetmetal, or plastic which has been either extruded into a channel shape or vacuum formed with an appropriate strengthening pattern. The structure has enough rigidity to support a child in play and functions as both a playhouse and a storage area when not in use. The basic concept of employing a demountable horizontal toy box section as the main structural element of a piece of juvenile furniture is adaptable for use with structures other than that simulating a garage.

3,774,358

STRUCTURAL MEMBRANE PANEL FORMED FROM SADDLE SHAPED SURFACE

Jesse R. Hale, 25913 Stanford Street, Hemet, Calif.

Continuation of Ser. No. 77,285, Oct. 1, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 290,101
Int. Cl. E04b 1/32, 7/08
U.S. Cl. 52—81 17 Claims



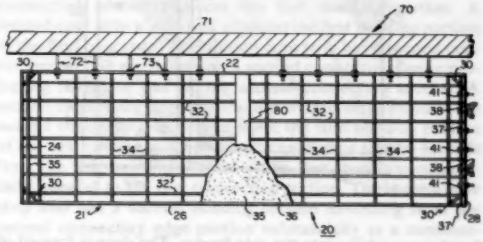
A structural membrane panel is formed from an even number of contiguous saddle-shaped surfaces which are bounded by a plane or skew polygon which surrounds a central structural surface which may take the form of a saddle, valley, or a cross-cap. Where a central saddle or valley is utilized, these central elements are bridged to consummate structural integrity.

3,774,359

REINFORCED CONCRETE PLATE CONSTRUCTION

Burton M. Kahn, c/o Kahn Construction Co., 51 Gillett St., Hartford, Conn.

Filed Mar. 15, 1971, Ser. No. 124,322
Int. Cl. E04c 3/26, 5/08
U.S. Cl. 52—125 10 Claims



A unitized framework of steel beams with reinforcing rods and stiffening brackets welded throughout, and made completely rigid by casting concrete within the framework and bonding the concrete to the framework, provides a rigid panel that approximates the characteristics of a reinforced concrete plate while requiring less concrete and less steel than prior art panels for equal load conditions. The steel and concrete plate is constructed by arranging steel members into a framework, the size and shape of the desired plate, and welding adjacent mitered ends of the members together. Added framework rigidity is provided by welding stiffening steel members at each corner. A plurality of reinforcing rods, spaced apart, extend from one side of the framework to the other. The reinforcing rods are first welded to a spacer bar having predetermined holes slightly larger than the rods and are then welded to the steel members. Added lateral support is provided for the reinforcing rods by welding several additional rods to the opposite sides of the framework substantially perpendicular to the first set of reinforcing rods. The rigid plate construction is finalized by casting concrete into the steel framework which is previously prepared with a bonding agent. The resulting unitary steel and concrete plate requires less concrete and less steel than normal panels when subjected to equal loads.

3,774,360

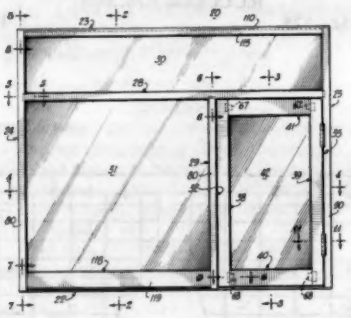
BUILDING ENTRANCE

S. Eugene Hubbard, and Lawrence F. Biebuyck, both of Niles, Mich., assignors to American Metal Climax, Inc., New York, N.Y.

Division of Ser. No. 59,986, July 31, 1970, abandoned. This application Oct. 22, 1971, Ser. No. 191,714
Int. Cl. E06b 1/04
U.S. Cl. 52—127 6 Claims

There is provided an improved building entrance including a system of frames, doors, and hardware which is extremely rugged and provides high performance, and is intended for applications requiring hard usage such as schools, colleges, and the like. The building entrance includes a through threshold assembly, a through head assembly, and side frame members

having integrally formed longitudinally extending screw splines. Screw fasteners extend through the threshold and

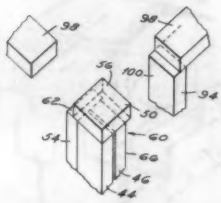


header assemblies into the side frames. The door is formed of generally tubular members, joined together with shear blocks and fastened by screws or welds, or both.

3,774,361
SHORE LINE BOAT ANCHOR
Ernest E. Tanner, Star Route, Greenville, Mo.
Filed Mar. 27, 1972, Ser. No. 238,274
Int. Cl. E02d *5/80;* **B63b** *21/34*
U.S. Cl. 52—162 **6 Claims**

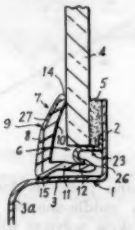
An anchor to secure a cord or other tying device to the ground includes a stake which is driven into the ground. At its leading end the stake has hinge plates which are movable relative to the stake about hinge pins. As the stake is driven into the ground, the hinge plates lie along the side of the stake, projecting toward the trailing drive end thereof. Once inserted, the stake is withdrawn slightly, and this causes the hinge plates to swing outwardly to an anchoring position wherein they project laterally from the stake and secure the stake firmly in the ground. A retaining cord is provided for holding plates in the anchoring position. To remove the anchor from the ground, the retaining cord is released, permitting the hinge plates to fold against the stake in the opposite direction as the stake is withdrawn. The cord which is secured by the anchor is attached to the stake between its leading end and its longitudinal midpoint.

3,774,362
STRUCTURAL CORNER POST AND FRAMING SYSTEM FOR BUILDINGS
Richard W. Matuschek, Birmingham, and William Garth, Jr., Sterling Heights, both of Mich., assignors to Univiron Corporation, Southfield, Mich.
Filed May 17, 1972, Ser. No. 254,031
Int. Cl. E04b *2/70*
U.S. Cl. 52—206 **17 Claims**



The building structure utilizes prefabricated frame components of equal heights in forming the external and internal framing systems. The basic frame components include a structural post, blank wall frames, window frames, door frames and end caps. Each of the frame components is elongated and is provided with a laterally extending elongated male connector along one vertical edge and a pair of horizontally extending structural members at the top and bottom of the frame component forming a female receptacle on the other vertical edge whereby the male connector on each of the frame components fits into the female receptacle of an adjacent frame component and is secured thereto. Each frame component has load bearing capabilities and may be used interchangeably as members of interior or exterior walls. Each frame component utilizes manufactured elements which are commercially available and which require a minimum amount of work thereon, if any, in order to utilize same in the frame components. Identical manufactured parts are utilized in assembling the frame components and there is a regular rhythm of spacing the vertical studs or members of the frame components to insure "on center" dimensions when compared with present panel constructions.

3,774,363
GLAZING WINDOW OR WINDSCREEN OPENINGS, PARTICULARLY IN VEHICLE BODIES
Cecil Kent, Woking, Surrey, England, assignor to Creators Limited, Woking, England
Filed May 10, 1971, Ser. No. 141,634
Int. Cl. E06b *3/58*
U.S. Cl. 52—400 **5 Claims**



The invention relates to glazing window or windscreen openings, particularly in vehicle bodies by securing the glass

by means of adhesive between the back of the glass and the back of the rebate. The edge of the glass is surrounded by at least one length of a decorative trim strip of flexible plastics material or a rubber-like elastomer having a front strip portion which covers the space between the edge of the glass and the wall of the rebate and also the front edge of the glass. The trim strip is constructed so that it can be positioned around the glass after the glass has been inserted in the rebate and secured by the adhesive, thus enabling the area of contact of the adhesive to be easily inspected before it is hidden by the fitting of the trim strip.

3,774,364

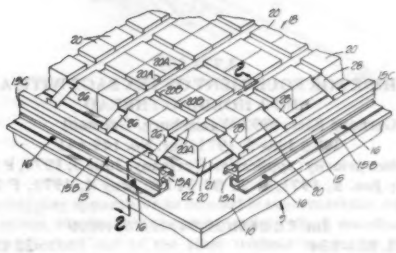
COVERING FOR MOBILE HOME TRAILERS

Eric C. Johnson, 2930 Colorado Cove, Santa Monica, Calif.

Filed Dec. 9, 1971, Ser. No. 206,398

Int. Cl. E04b *1/74*

U.S. Cl. 52—509 **5 Claims**



Heat or cold and sound and condensation insulation for mounting on planar surfaces such as, for example, the roof of a trailer home, comprises a series of abutting blocks of closed cell polystyrene which have their lower surfaces cemented to a poly-vinyl-chloride base. The upper exposed surfaces of such blocks are grooved to accept flexible fastening belts or straps which have their ends releasably secured to rails mounted on the roof.

3,774,365

PANEL AND CORE

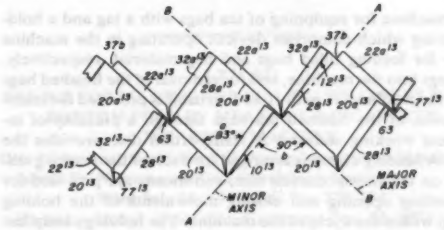
Theodore P. Cole, Jr., Monroeville Borough, and John W. Turnage, Franklin Twp., Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 35,864, May 8, 1970, abandoned.

This application July 24, 1972, Ser. No. 274,554

Int. Cl. E04b *2/58*; E04c *2/32*

U.S. Cl. 52—615 **19 Claims**



A core member for a high-strength, light-weight panel for use as a temporary landing field mat, decking for trucks, tractors, rail cars, or the like is disclosed. The panel has a cover member secured to one side of the core member. The core member has a first core strip. The first core strip has a first bonding section provided with a first bonding flange projecting from one end of the first bonding section. A first bonding portion is provided on one side of the first bonding section. The first core strip also has one end of a first connecting section projecting from the terminal portion of the first bonding portion at a bend angle so that the other end of the first connecting section is provided with a first connecting flange projecting from one end of the first connecting section. A first connecting edge portion is provided on the side of the first connecting section adjacent the first bonding portion. A second core strip is disposed adjacent the first bonding portion of the first core strip. The second core strip has a second connecting section provided with a second connecting flange projecting from one end of the second connecting section. A second connecting edge portion is provided on one end of the second connecting section adjacent the first bonding portion of the first core strip. The second connecting section extends from the first bonding portion of the first core strip substantially parallel to the first connecting section. The second core strip also has a second bonding section extending from the second connecting edge portion substantially as a continuation of the first bonding section of the first core strip. The second bonding section is provided with a second bonding flange projecting from one end of the second bonding section. A second bonding portion is provided adjacent the second connecting edge portion in sealing engagement with the first bonding portion of the first bonding section. Connection means are associated with the second bonding portion of the second bonding section and the first bonding portion of the first bonding section to secure them together thereby forming adjacent half portions of two adjacent substantially parallelepiped cells of the core member.

3,774,366

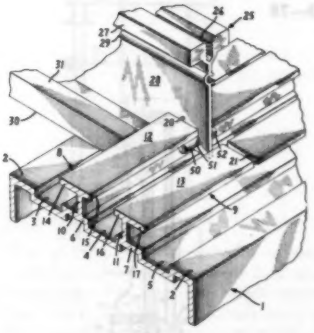
BOX BEAM STRUCTURES AND CONNECTIONS FOR BEAM-SUPPORTED STRUCTURES

William H. Baker, 403 Loudonville Rd., Albany, N.Y.

Filed Nov. 17, 1970, Ser. No. 90,306

Int. Cl. E04c *2/42*; E04b *1/36*

U.S. Cl. 52—664 **15 Claims**



Box beams are provided having flanged lug sections on one side thereof adapting them for attachment to other structural components such as cross supports and beam-supported structures.

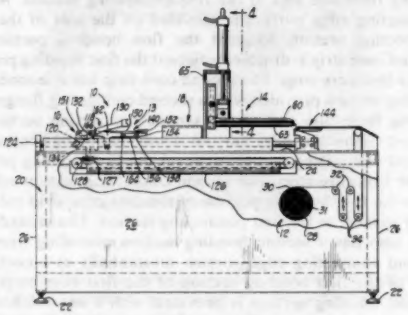
Connections are provided for attaching structural components such as purlins to such beams, for instance, to form a cross-supported beam structure, in a manner that facilitates assembly and disassembly, and is adapted for mass fabrication of both components as modular units.

3,774,367

APPARATUS FOR PACKAGING ARTICLES

Hershey Lerner, Warrensville Twp. Cuyahoga City, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Dec. 27, 1971, Ser. No. 211,924
Int. Cl. B65b *57/02, 43/12, 43/26*
U.S. Cl. 53—67 14 Claims



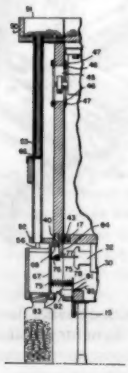
A packaging machine and a method of packaging are disclosed by which articles are inserted into plastic bags. The bags are supported at a loading station, expanded and removed from the loading station with the article. Bags are fed from a supply magazine to the loading station automatically by a bag feeding mechanism. The loading station is defined by bag supporting horns which are constructed so that bags are readily removed from the loading station with the article while the bags are in an expanded condition.

3,774,368

TABLET COUNTING AND FILLING APPARATUS

Herman J. Paprzycki, 629 Highland Ave., Cherry Hill, N.J.; Edward J. Kennedy, 436 E. Vankirk St., Philadelphia, Pa.; Henry G. Martinez, 6052 Loretto Ave., Philadelphia, Pa., and Dominick D. Stabilito, Little Farms Estates, Box 17, 4251 County Line Rd., Chalfont, Pa.

Filed June 19, 1972, Ser. No. 263,940
Int. Cl. B65b *57/20*
U.S. Cl. 53—78 12 Claims



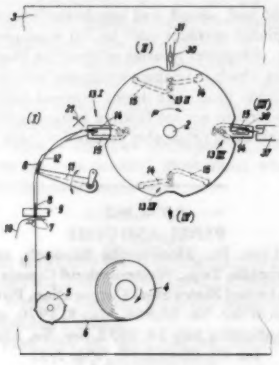
A tablet counting and filling apparatus which employs a counting board including a plurality of counting chutes. The counting chutes are disposed adjacent a hopper for a mass of tablets. The counting board is supported at its lower end upon a pivot pin and the top end thereof is driven in a path varying from an arc through an elliptical path to and including a circular path to agitate the tablets so as to pass into the chutes and assume a stacked relationship therein. A pair of support bars pivoted at the upper portion of the counting board both support a dumping gate which selectively closes off the lower end of the chutes and a counting gate which selectively closes off the chutes intermediate their length and which operates in coordination with the dumping gate to effect counting of the tablets. A discharge chute is attached to the dumping gate and funnels the tablets from the counting chutes into bottles disposed beneath the discharge chute. A solenoid motor operates to concurrently open the dumping gate and vibrate the discharge chute to facilitate filling of the bottles.

3,774,369

MACHINE FOR EQUIPMENT OF TEA BAGS WITH A TAG AND A HOLDING THREAD

Paul Gerhard Klar, 8992 Wasserburg, Germany

Filed June 3, 1971, Ser. No. 149,641
Claims priority, application Germany, June 3, 1970, P 20 27 167.4; Jan. 5, 1971, P 21 00 317.8; May 4, 1971, P 21 21 892.8
Int. Cl. B65b *29/04, 11/18, 49/00*
U.S. Cl. 53—134 22 Claims



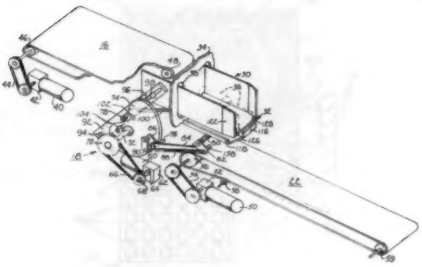
A machine for equipping of tea bags with a tag and a holding string which comprises devices operating in the machine cycle for feeding filled bags and bag material, respectively, and tags into the machine, and for removal of the finished bags from the machine. A path closed on itself is provided for transportation of the finished tea bags through a plurality of individual working stations. A transportion disc provides the path. A holding clamp is arranged for each of the working stations on the transportation disc, and means are provided for controlling opening and closing movements of the holding clamp within the cycle of the machine. The holding clamp has two arms. One of the arms has a pocket for the reception of the tag equipped with a thread. The other of the arms has a slot with a thread holder. A transportation lever is also provided, which slides in the tag, equipped with the holding thread, in one of the stations, along a guide, into the pocket such that one end of the thread is such, by the slot.

3,774,370

MERCHANDISE BAGGING DEVICE AND METHOD

Sidney Fried, Ridgefield, Conn., assignor to Speedcheck Systems, Inc., Ridgefield Park, N.J.

Filed June 8, 1971, Ser. No. 150,989
Int. Cl. B65b *67/04, 5/06*
U.S. Cl. 53—255 11 Claims



The bagging apparatus can be used in supermarkets, department stores, etc. to increase the speed at which merchandise can be checked out of the store without having to hire a separate employee to bag the merchandise. The check-out employee places the merchandise in a horizontal receptacle. When the receptacle is full, a bag is slipped over the receptacle. Then, a button is pushed and the bagging device automatically withdraws the receptacle from the bag horizontally, and the bag with its merchandise then supported by a transfer platform just below. The transfer platform has a relatively short upwardly-extending flange. The transfer platform is rotated so as to turn the bag upright. The flange has dimensions such that it supports the bag and prevents it from falling off of the platform until the bag is transferred onto a moving conveyor belt. The conveyor belt pulls the bag and maintains the bag upright. The platform then returns upwardly to its initial horizontal position. The receptacle then is returned to its initial position and is ready for use in filling another bag. The full bags are accumulated on the conveyor until removed by the customer. The retraction and return of the receptacle, and the movement of the transfer platform from horizontal to vertical and back again are controlled by a single cam having two followers on opposite sides, one follower operating the transfer platform and the other operating the receptacle. The cam is shaped so that each cam portion serves a dual purpose and synchronizes correctly the operation of the various components with respect to one another.

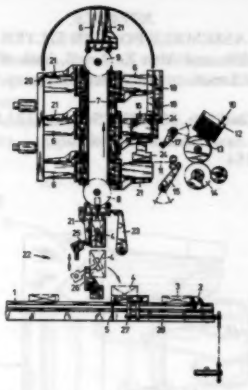
3,774,371

DEVICE FOR MAKING AND FILLING WRAPPERS WITH BOTTOM FOLD BY MEANS OF A CIGARETTE WRAPPING MACHINE

Otto Niepmann, Gevelsberg, Germany, assignor to Maschinenfabrik Fr. Niepmann & Co., Gevelsberg, Germany

Filed July 10, 1972, Ser. No. 270,234
Claims priority, application Germany, Dec. 22, 1971, P 21 63 782.1
Int. Cl. B65b *1/02*
U.S. Cl. 53—183 6 Claims

A device for withdrawing wrappers from mandrels on which the wrappers are formed and presenting the wrappers to a feed path along which articles to be placed in the wrappers move. The wrappers are withdrawn from the mandrels linearly and are then bodily turned into the feed path with the open ends



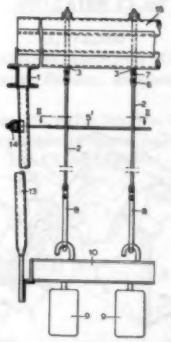
facing the approaching articles and are then rotated about the longitudinal axes thereof to place the wrappers in an oriented position conforming to that of the articles.

3,774,372

CONNECTION OF DISCHARGE ELECTRODES

Heribert Heer, Olpe-Rhode; Werner Kantelhardt, Olpe, and Gerhard Kritzler, Freudenberg, all of Germany, assignors to Apparatebau Rothemuhle Brandt & Kritzler, Rothemuhle, Germany

Filed Oct. 12, 1971, Ser. No. 188,106
Claims priority, application Germany, June 14, 1971, P 21 29 347.0
Int. Cl. B03c *3/04*
U.S. Cl. 55—146 7 Claims



An electrostatic precipitator has vertical discharge electrodes which are restrained from vibration by horizontal connecting members running between the electrodes and interacting with them. The connecting members are secured outside the electric field to end frames of the support structure from which the electrodes hang. The electrodes and the connecting members are capable of relative vertical movement where they interact. One form of connecting member is a taut wire woven through each row of discharge electrodes; in another form an electrode is received in a sleeve passing vertically through a rod-like connecting member. The connecting

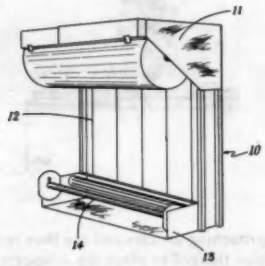
members are provided at a level or levels not coincident with the expected nodes of standing waves likely to occur in the electrodes.

3,774,373

MANDREL ASSEMBLY FOR AIR FILTER APPARATUS

Wilson A. Welch, and Alan E. Revell, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Jan. 28, 1972, Ser. No. 221,550
Int. Cl. B01d 46/22
U.S. Cl. 55—354 4 Claims



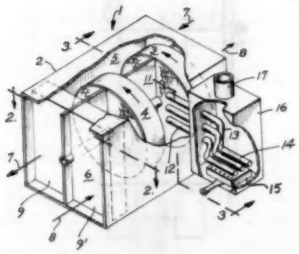
An automatic air filter and more particularly an automatic air filter of the type employing an elongated air cleaning web adapted to be progressively advanced longitudinally across an air stream passage to clean dirty air as it passes through such passage.

3,774,374

ENVIRONMENTAL CONTROL UNIT

Raymond James Dufour, Wheaton, and William F. Rush, Arlington Heights, both of Ill., assignors to Gas Developments Corporation, Chicago, Ill.

Filed June 9, 1971, Ser. No. 151,349
Int. Cl. B01d 53/06
U.S. Cl. 55—316 4 Claims



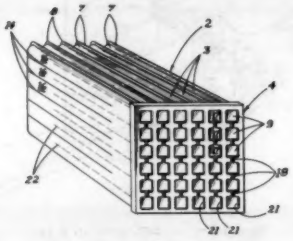
The application discloses an improved environmental control unit using in unitary combination a heat pipe as the heat source for the regeneration of the L-wheel. The heat pipe contains sodium metal which is vaporized by heating one end of the pipe in a firebox remote from the environmental control unit. The other end of the heat pipe extends into the heating section just upstream from the L-wheel. There, the air passing over the heat pipe surface, which optionally may be finned, causes sodium vapor in the pipe to condense, thus giving up its latent heat of condensation to the air stream, heating it to a temperature sufficient to dry the wheel. The improved heat pipe is efficient, safe, easily controllable and self-adjustable.

3,774,375

POCKET TYPE FILTER

Tom R. Smith, Lousiville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Nov. 19, 1971, Ser. No. 200,298
Int. Cl. B01d 46/02
U.S. Cl. 55—382 4 Claims



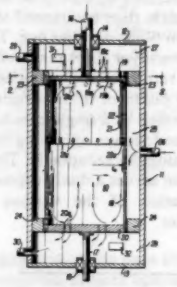
An improved pocket type fluid filter, the pockets of the filter being fabricated from a fluid permeable batt-scrim laminate joined together by heat seals.

3,774,376

CENTRIFUGAL GAS SEPARATOR

Yoichi Takashima, Tokyo-to; Yoshitami Endo, Kawasaki, and Kenya Saitou, Yokohama, all of Japan, assignors to Tokyo Shibaura Electrical Company Ltd., Kawasaki-shi, Japan

Filed June 16, 1971, Ser. No. 153,510
Claims priority, application Japan, June 17, 1970, 45/52594
Int. Cl. B01d 45/12
U.S. Cl. 55—407 8 Claims



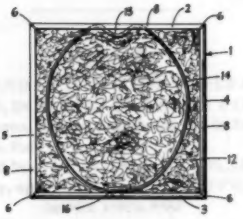
A centrifugal gas separator is disclosed which employs a cylindrical centrifuge drum having a hollow shaft mounted on suitable bearings within a housing. Supply means are provided for feeding a mixed gas to be separated into the drum. The supply means has openings located radially near the inner periphery of the drum and axially at approximately the center of the drum. Each opening in the supply means communicates with the hollow shaft. Thus the mixed gas to be separated enters the centrifuge drum near the inner periphery thereof, and the gas is then able to attain a relatively high angular velocity, whereby the separating power of the centrifuge is elevated.

3,774,377

FILTER ASSEMBLY WITH REPLACEABLE FILTER ELEMENT

George H. Bishop, Louisville, Ky., assignor to America Air Filter Company, Inc., Louisville, Ky.

Filed Apr. 21, 1972, Ser. No. 246,337
Int. Cl. B01d 27/08
U.S. Cl. 55—493 6 Claims



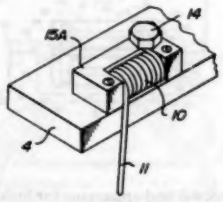
An improved fluid filter assembly with a replaceable filter element having a frame, channel shaped in cross-section defining a shallow box with an upstream and downstream opening therein to permit fluid flow therethrough and a foraminous filter supporting member adjacent to one of the openings; a fibrous filter mat covering the foraminous member and having marginal portions extending into the channel shaped frame; and, a resilient endless retainer removably engaging the fibrous filter mat by nesting in the channel shaped frame, the resilient endless retainer being an endless loop pivotally attached to the exterior of one extremity of the channel shaped frame, the loop including an inwardly extending groove portion at a position opposite the portion of the loop which is pivotally attached to the channel shaped frame, the inwardly engaging portion being adapted for removable engagement with the interior of the channel shaped frame.

3,774,378

METHOD OF DISLODGING DEAD GRASS FROM A LAWN

Jack Sherratt, Edmonton, Alberta, Canada, assignor to Arthur Mihalcheon, Edmonton, Alberta, Canada

Division of Ser. No. 886,341, Dec. 18, 1969, which is a continuation-in-part of Ser. No. 786,486, Nov. 15, 1968, abandoned. This application June 26, 1970, Ser. No. 59,863
Int. Cl. A01d 77/06
U.S. Cl. 56—1 3 Claims



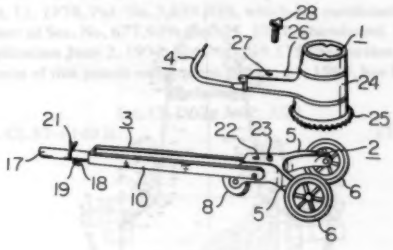
An attachment for use with a household-type rotary power lawn mower having a vertical spindle. A bar is horizontally mounted on the spindle. One or two coil spring tines are mounted on the bar at each end. The tooth of each tine extends downwardly so that its tip is at ground surface. The high speed rotation of the tines over the ground along with the movement of the machine along the ground results in the tines scrubbing dead grass out of a lawn without otherwise seriously damaging the live grass.

3,774,379

LAWN MOWER

Shiro Mizobata; Yoshiro Kawano, and Masamiki Matsumoto, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sept. 20, 1972, Ser. No. 290,481
Claims priority, application Japan, Sept. 30, 1971, 46/90357
Int. Cl. A01g 3/06
U.S. Cl. 56—10.3 3 Claims



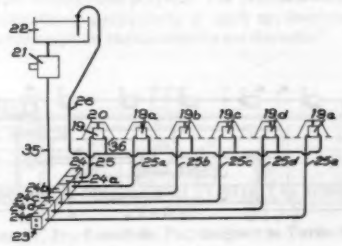
A lawn mower comprises a motor-driven lawn mower body having a holding part for user's manual handling and a caster body having two branched arms to which the holding part of mower body is detachably coupled so as to allow the user to handle the lawn mower readily in either way of using the mower body alone separately or with the caster body. Fixed blade in the mower body is secured to a fixing plate of a plastics fixed to the mower body containing the motor and movable blade has a resilient clutch means for breaking connection with drive power transmitting means upon application of reverse directional load to the movable blade.

3,774,380

REAPING AND MOWING MACHINE

Marcel Ancellin, Paris, France, assignor to Societa FFSA, Paris, France

Filed Mar. 29, 1972, Ser. No. 239,134
Claims priority, application France, Apr. 23, 1971, 7114659
Int. Cl. A01d 69/04
U.S. Cl. 56—11.9 5 Claims



A reaping and mowing machine having at least two drums, carrying cutting blades, mounted on a horizontal beam for rotation about vertical axes. The drums are rotated by in-

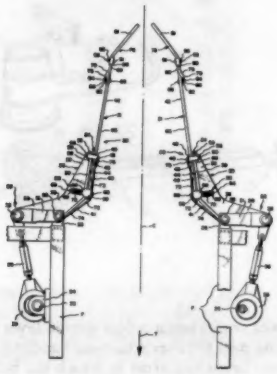
dividual hydraulic motors supplied with hydraulic fluid by a single pump via a distributor connected to the fluid inlets of the motors, and the fluid outlets of the motors are connected to a return conduit to a hydraulic fluid reservoir.

3,774,381

PICKING ARM CONSTRUCTION IN A MACHINE FOR HARVESTING FRUIT GROWN ON PLANTS ARRANGED IN A ROW

Charles G. Burton, Lewiston, N.Y., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,419
Int. Cl. A01d *19/00*
U.S. Cl. 56—330 **18 Claims**



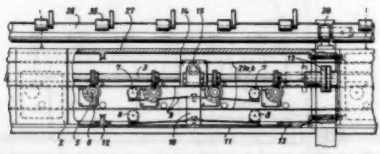
An improved picking arm construction in a machine for harvesting fruit grown on plants arranged in a row, such as grapes, the picking arm being fulcrumed on a support member movable back and forth transversely of the row, relative movement between such arm and member about such fulcrum being yieldingly restrained, and a finger on the trailing end of the picking arm and extending laterally therefrom.

3,774,382

MULTI-UNIT SPINNING MACHINE

Gerhard Bartling, Burgstall, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed June 20, 1972, Ser. No. 264,450
Claims priority, application Germany, June 21, 1971, P 21 30 725.5
Int. Cl. D01h *1/00, 1/12, 7/00*
U.S. Cl. 57—1 R **8 Claims**



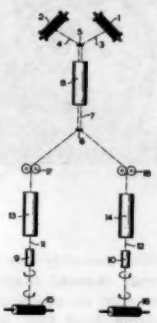
A multi-unit spinning machine divided into groups of working units wherein the drive means for each of the units including the turbine belts, etc. are arranged in a common channel wherein air under pressure is supplied while the driven means such as the spinning turbine, etc. are located on the exterior of this channel and connected to a second channel to which vacuum is supplied.

3,774,383

PROCESS FOR TEXTURIZING SYNTHETIC YARNS

Adolf Stemmer, Waldweg 10, 478 Lippstadt, Germany

Filed Dec. 20, 1971, Ser. No. 209,945
Int. Cl. D02g *1/04*
U.S. Cl. 57—34 HS **2 Claims**



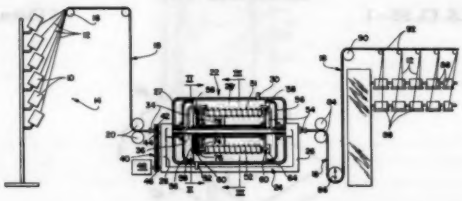
Texturizing synthetic yarns to afford the knit fabric produced from such yarns with a high degree of elasticity and good transparency is achieved by a thread separating process so that after separation of the entwined portion and before winding on spools, each yarn is subjected over a further stretch to another texturizing at the same velocity of travel. The texturizing that follows thread separation is achieved by twisting and heat fixation.

3,774,384

YARN PROCESSING POST TREATMENT

Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation-in-part of Ser. No. 166,409, July 27, 1971, abandoned. This application Feb. 28, 1972, Ser. No. 229,875
Int. Cl. D02j *1/12*; D02g *1/20*; D06c *1/08*
U.S. Cl. 57—34 HS **15 Claims**



Continuous process and apparatus for bulking textured yarn includes combining a plurality of strands of the textured yarn into a continuous tow, forming the tow into a continuous series of loops, moving the looped tow through a bulking zone, setting the bulked tow, separating the tow into individual bulked strands, and collecting the strands into packages. The bulking chamber includes a plurality of positively driven screw-like members, which advance the tow through the chamber under bulking conditions at a predetermined rate. In one embodiment the tow is delivered into the chamber

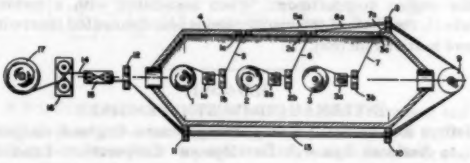
through a course which includes forming the tow into relatively large loops which are permitted to shrink and thus bulk promptly upon introduction into the bulking zone. The bulking zone includes controlled conditions of temperature and humidity. In another embodiment the tow is first subjected to a preconditioning step within the bulking zone and thereafter is bulked while being relaxed under controlled conditions in the bulking zone. Subsequently, the bulk is set in a separate zone by dry heat.

3,774,385

MACHINES AND METHODS FOR MANUFACTURING ROPES, IN PARTICULAR STEEL CORDS

Michele L. Maderna, Monza, Italy, assignor to Industrie Pirelli S.p.A., Milano, Italy

Filed Nov. 19, 1971, Ser. No. 200,338
Claims priority, application Italy, Dec. 4, 1970, 32630 A/70
Int. Cl. D07b 3/12
U.S. Cl. 57—58.52 4 Claims



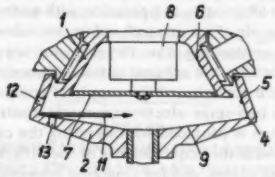
Apparatus and method of manufacturing rope or cord wherein a double-twisting device is used in conjunction with an equalizer in a single apparatus to provide rope or steel cord of the equiverse type.

3,774,386

DEVICE FOR AVOIDING THE ACCUMULATION OF LINT WITH RINGLESS SPINNING

Gerhard Kutscher, and Rolf Wehling, both of Bremen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Feb. 15, 1972, Ser. No. 226,593
Claims priority, application Germany, Mar. 10, 1971, P 21 11 422.7
Int. Cl. D01h 1/12
U.S. Cl. 57—58.95 5 Claims



A spinning device for ringless spinning, in which a rotatable carding member substantially coaxial with a subatmospheric spinning turbine has its bottom side open toward the spinning turbine closed by a closing disc which is preferably flush with that adjacent surface of the carding member which faces the spinning turbine.

3,774,387

HYDROPHILIC TEXTILE PRODUCTS

Rudolph Woodell, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 86,438, Nov. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 71,582, Sept. 11, 1970, Pat. No. 3,659,498, which is a continuation-in-part of Ser. No. 677,949, Oct. 25, 1967, abandoned. This application June 2, 1972, Ser. No. 259,175The portion of the term of this patent subsequent to Apr. 11, 1989, has been disclaimed.
Int. Cl. D02g 3/02, 3/22
U.S. Cl. 57—140 R 12 Claims

Textile products comprising an assembly of fibrils. The assembly can be in the form of a yarn, plexifilament, fabric, or the like, and is of at least staple fiber length. The fibrils are of irregular cross-section and are composed of a non-cellulosic, synthetic organic polymer, and most are interconnected to form a plexus. The products are stable to repeated water exposure, and have a limiting surface tension greater than 72 dynes per centimeter, a specific surface of at least about 0.8 square meter per gram, a fibril concentration of at least about 5×10^3 per quare centimeter, and a wicking parameter greater than 6. The products can be prepared by extruding an aqueous dispersion of the polymer at selected elevated temperature and pressure conditions. Preferred products are plexifilamentary strands of an acrylonitrile polymer. The products are useful in textile applications, particularly in such applications where good water-absorption characteristics are desirable.

3,774,388

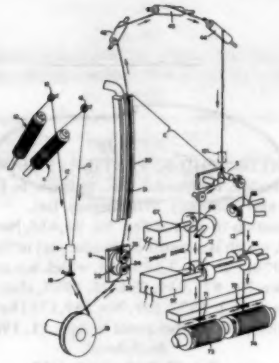
METHOD FOR PRODUCING SYNTHETIC TORQUE YARNS

Emil J. Berger, Jr., Lansdale, Pa., assignor to Turbo Machine Company, Lansdale, Pa.

Division of Ser. No. 873,202, Nov. 3, 1969, Pat. No. 3,623,311. This application Feb. 17, 1971, Ser. No. 116,225
Int. Cl. D02g 1/00
U.S. Cl. 57—157 TS 2 Claims

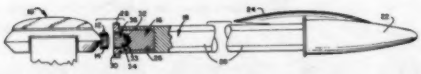
Textured synthetic torque-lively yarns are cold drawn to eliminate substantially their tendency to snarl during normal

knitting or other fabricating operations. The method produces a new product characterized by excellent stretch properties in



the fabricated end product. The new yarn is particularly suited for use in the knitting of stretch hosiery and other fabrics.

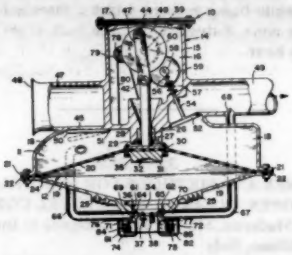
3,774,389
WATCH STEM WINDER
Duane J. Wilken, 2918 E. 101th Street, Chicago, Ill.
Filed Oct. 6, 1972, Ser. No. 295,493
Int. Cl. G04b *3/00*
U.S. Cl. 58—73 **8 Claims**



A watch stem winder which is essentially a coupling or clutching element and which may be part of a holder or handle, which holder or handle may be in the form of a writing instrument such as a pen or pencil, or as the cap of such a writing instrument or the like, in which the coupling or clutching element which engages the head of the watch stem has a preformed generally concave shape and is provided with means such as a series of ribs so that it may be placed on and engage the watch stem head for winding the watch stem.

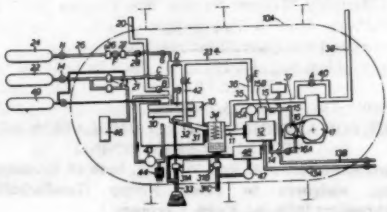
3,774,390
GAS ACCELERATOR
Hector A. Dauvergne, San Leandro, Calif., assignor to Dauvergne Bros. Inc.
Filed Sept. 30, 1970, Ser. No. 76,908
Int. Cl. F02b *37/04*
U.S. Cl. 60—13 **14 Claims**

A gas accelerator comprising both an air compressor and a heat engine of the internal combustion type. Although the mechanism is useful as an externally driven gas compressor, as a self-driven gas compressor, and as a self contained power plant delivering torque to an output power shaft, it is specifically adapted for use in association with a gas turbine wheel and combustion chamber therefor to provide therewith a relatively non-polluting power plant for automotive vehicles and the like. The mechanism includes a chamber subdivided into compressor and engine compartments by a diaphragm reciprocable between alternate extreme positions respectively defining maximum volume for the compressor compartment and minimum volume for the engine compartment, and vice versa. Each compartment is provided with valve-equipped inlet and outlet ports, and the diaphragm is connected with a reciprocable plunger coupled by crank mechanism to a power



shaft which is driven by the plunger on the power stroke thereof in response to ignition of a combustible charge within the engine compartment. When associated with a turbine wheel, the shaft of the mechanism is also connected therewith and is driven thereby.

3,774,391
INTERNAL COMBUSTION ENGINES
Jeffrey Roy Puttick, Upper Beeding, Sussex, England, assignor to National Research Development Corporation, London, England
Filed Mar. 31, 1971, Ser. No. 129,700
Claims priority, application Great Britain, Apr. 1, 1970, 15517/70; Apr. 1, 1970, 15520/70; Apr. 1, 1970, 15522/70
Int. Cl. F02b *69/00*
U.S. Cl. 60—14 **8 Claims**



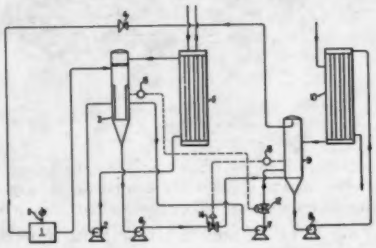
A compression-ignition internal combustion engine power plant is provided with means for submerged operating in the recycle mode in which a proportion of the exhaust gas discharged from the engine is mixed with pure oxygen gas and is supplied to the engine intake for aspiration and combustion with liquid hydrocarbon fuel injected into the combustion chamber, as an alternative to operation with normal aspiration of atmospheric air. Five control valves or valve groups are provided for controlling the oxygen gas supply, the atmospheric air intake, the exhaust outlet to atmosphere, the exhaust gas recycle conduit and the supply of compressed air for starting, and a two-stage electropneumatic control system of pneumatic valves is provided for operating the control valves in accordance with the requirements of the different modes of operation of the engine and for changing between modes. The engine is controlled to run in the recycle mode at a constant maximum speed under varying loads by control of the oxygen gas supply in dependence on the governed fuel input, or vice versa. The gas pressure in the engine intake is controlled to a constant absolute value by being sensed by an aneroid capsule which provides a feedback signal for regulating the speed of the exhaust gas compressor of the engine.

3,774,392

INSTALLATION INCLUDING A PRIME MOVER AND MEANS FOR EXTRACTING ENERGY FROM A HOT FLUID MEDIUM AND USING IT TO DRIVE THE PRIME MOVER

John Moseley Davies, Lavender Cottage, Weeden Ln., Amersham, and John Colin Clarke, Darien 6 Abbey Ln., Northwich, both of England

Continuation of Ser. No. 33,579, May 1, 1970, abandoned.
This application Jan. 6, 1972, Ser. No. 215,894
Int. Cl. F01k 25/10
U.S. Cl. 60—36 24 Claims



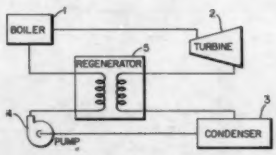
A hot fluid medium is passed through a heat exchanger and heats in it an emulsion of a refrigerant material in a liquid. Refrigerant vapor thereby produced drives a prime mover and vapor that has done work in the prime mover is brought into contact with a liquid and thereby condensed. The condensate is supplied to the emulsion in the heat exchanger.

3,774,393

METHOD OF GENERATING POWER

Max F. Bechtold, Kennett Square, and Charles W. Tullock, Landenberg, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 17, 1971, Ser. No. 172,513
Int. Cl. F01k 25/00
U.S. Cl. 60—36 4 Claims



Hydrochlorofluorobenzenes defined by $C_aH_nCl_bF_c$ wherein a is 1 to 3, b is 2 to 4 and c is 1 to 3 with $a+b+c=6$ and $a+b=3$ to 5, and mixtures thereof can be used to generate power in a Rankine cycle engine. The compounds are surprisingly thermally stable and have low toxicity.

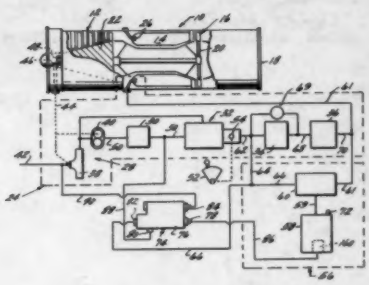
3,774,394

GAS TURBINE ENGINE FUEL DRAIN SYSTEM AND COOPERATING VALVE AND PUMP MEANS

Melvin E. Criffield, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Aug. 9, 1971, Ser. No. 170,131
Int. Cl. F23n 5/24; F02c 9/00
U.S. Cl. 60—39.09 R 7 Claims

A fuel drain system for an aircraft gas turbine engine includes an eductor pump and valve means therefor to direct both fuel pressurized by the engine during engine spin-down and fuel drained from the fuel supply system upon engine shutoff to the eductor so as to recycle the latter to a point in the fuel supply system which is upstream of the fuel supply system shutoff valve.

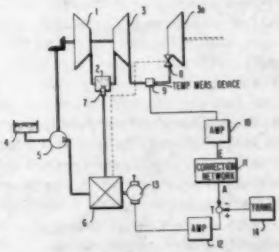


3,774,395

CONTROL SYSTEM FOR GAS TURBINE ENGINES

Christian Greune, Furstenfeldbruck, and Karl Maier, Munich, both of Germany, assignors to Motoren-Und Turbinen-Union Munich GmbH, Munich, Germany

Filed Dec. 29, 1971, Ser. No. 213,772
Claims priority, application Germany, Dec. 29, 1970, P 20 64 340.7
Int. Cl. F02c 3/10
U.S. Cl. 60—39.16 R 13 Claims

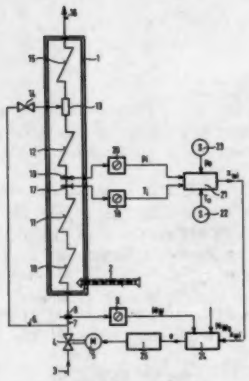


A control system for gas turbine engines wherein the gas temperature downstream of the combustion chamber is influenced by control of the quantity of fuel supplied to the combustion chamber and/or adjustment of the stator upstream of the power turbine. The gas temperature downstream of the combustion chamber is measured by a measuring device having an inherent time delay which is incorporated in the output signal of the device which is indicative of the measured temperature. The output signal is fed to a correction device which compensates for the inherent time delay and the compensated signal is compared with a signal representative of a desired temperature value in accordance with the engine parameters. An output signal of the difference between the measured temperature and the desired temperature is fed to a control device for adjusting the quantity of fuel supplied to the combustion chamber and/or adjusting the stator upstream of the power turbine. The response of the measuring device can be represented by first and second time constants and the correction device includes a feedback network having an impedance corresponding to the time constants for compensating the output signal of the measuring device.

3,774,396
METHOD AND APPARATUS FOR CONTROLLING A HEAT EXCHANGER

Ladislaus Borsi, Karlsruhe, and Helmuth Dingler, Worth, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 14, 1972, Ser. No. 244,151
Claims priority, application Germany, Apr. 14, 1971, P 21 18 028.9
Int. Cl. F22b *35/18*
U.S. Cl. 60—106 **22 Claims**



A method of controlling a heat exchanger such as a forced-flow boiler or the like is disclosed. The heat exchanger is supplied with the operating mediums of fuel and feedwater and generates slightly superheated steam. The method includes the steps of continuously determining the specific actual enthalpy of the slightly superheated steam and utilizing this enthalpy to control at least one of the operating mediums.

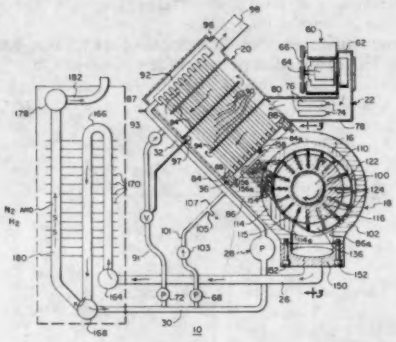
The apparatus for performing the method of the invention includes sensing devices for sensing the pressure and temperature of the slightly superheated steam. A computation circuit of the apparatus determines the specific actual enthalpy as an electrical quantity to control an adjusting device for controlling at least one of the operating mediums.

3,774,397
HEAT ENGINE

Richard E. Engdahl, Danbury, Conn., assignor to Energy Research Corporation, Bethel, Conn.

Filed Aug. 4, 1971, Ser. No. 168,866
Int. Cl. F01k *13/02*; F01c *17/00*
U.S. Cl. 60—107 **17 Claims**

A substantially pollution-free heat engine employing steam as the working fluid and operable on a cycle approaching a Rankine cycle. The engine includes a lightweight, small-size, highly efficient, boiler expander and condenser system which utilizes advanced material technology in order to achieve maximum system operating temperatures of approximately 1,200°F. and operating pressures up to 3,500 psi. The engine is especially suitable for use in motor vehicles and is capable of fast start-ups so as to produce 65 percent of maximum power within 45 seconds or less. Moreover, the engine provides an idle mode of operation for driving vehicle accessories

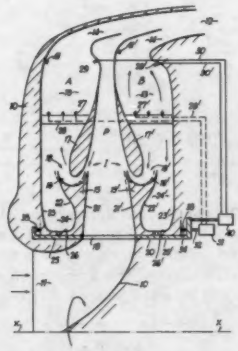


and the like and in addition is responsive to produce rapid power changes needed for acceleration and heavy pulls on steep grades.

3,774,398
GAS GENERATOR

Alexander Hossen Etessam, 91 Eldorado Ave., Shemiran, Tehran, Iran

Continuation-in-part of Ser. No. 55,379, July 16, 1970, abandoned. This application Oct. 8, 1971, Ser. No. 187,612
Int. Cl. F02k *7/04*
U.S. Cl. 60—248 **6 Claims**



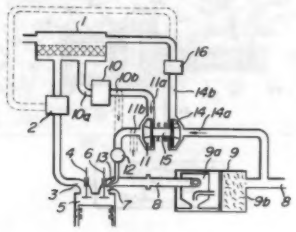
A gas generator for a turbine or jet power plant comprising a pair of coextensive combustion chambers normally coaxially arranged between the inlet and outlet. Precompression of the fuel-air mixture is obtained by the utilisation of a vortex in the air inlet or by-pass passage and the use of resonance chambers, there being no inlet valve.

3,774,399

RECIRCULATION TYPE EXHAUST GAS CLEANING SYSTEM

Hidetaka Nohira, Susono, and Hiroaki Nishimura, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Toyota-shi, both of Japan

Filed Aug. 22, 1972, Ser. No. 282,662
Claims priority, application Japan, Aug. 23, 1971, 46/64294
Int. Cl. F02m *25/06*; F02b *75/10*
U.S. Cl. 60—278 5 Claims



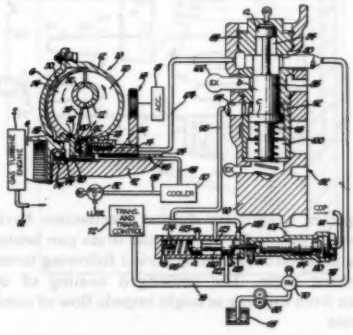
Recirculation type exhaust gas cleaning system comprising a turbine driven by the output air of an air pump and adapted to drive a blower for directing a part of the exhaust gas into an air cleaner or a carburetor provided in an engine intake system, whereby the maximum temperature in the engine cylinder is reduced and therefore the nitrogen oxide content in the exhaust gas can be decreased.

3,774,400

CHARGING PRESSURE CONTROL FOR FLUID UNIT

John O. Edmunds, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 19, 1972, Ser. No. 245,561
Int. Cl. F16h *41/20*
U.S. Cl. 60—358 7 Claims



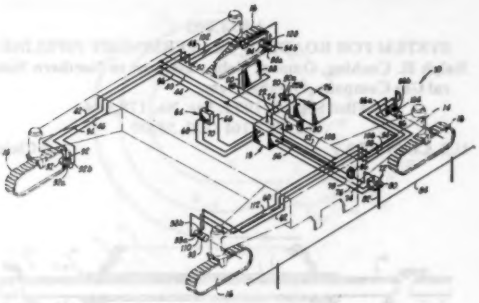
In the preferred embodiment compressor discharge pressure from a gas turbine engine produces a signal which is employed to vary the supply of working fluid from a charging pressure control valve to a fluid coupling. Flow of working fluid to the coupling is proportional to engine power output so that the torque transmitting capacity of the unit is progressively increased or decreased as engine power is progressively increased or decreased.

3,774,401

AUTOMATIC CONTROL SYSTEM FOR USE WITH A HYDRAULIC DRIVE SYSTEM

Thomas E. Allen, Mustang, Okla., assignor to CMI Corporation, Oklahoma City, Okla.

Filed June 26, 1972, Ser. No. 266,505
Int. Cl. F15b *11/22*
U.S. Cl. 60—420 17 Claims



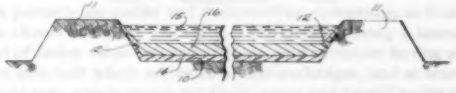
An automatic control system for use with a hydraulic drive system which includes a source of pressurized hydraulic fluid and first and second hydraulic drive motors deriving their power from said source of pressurized hydraulic fluid, comprising a differential valve in fluid communication with the source of pressurized hydraulic fluid and a flow divider in fluid communication with the differential valve and with a flow compensator. The flow compensator is in fluid communication with the first and second hydraulic drive means. A compensator valve member is carried by the flow compensator for controlling the relative rates of flow of hydraulic fluid to the first and second hydraulic drive motors in response to load variations encountered by the hydraulic drive means. A control unit is in fluid communication with the source of pressurized hydraulic fluid and with the flow divider and includes a control valve member for controlling hydraulic fluid signals being sent therefrom to the flow divider. An actuator is operatively connected to the control valve member for actuating the control valve member in response to stimulus from a source external to the automatic control system. A flow divider valve member is carried by the flow divider for controlling the relative rates of flow of hydraulic fluid through the flow divider in response to the hydraulic fluid signals from the control unit.

3,774,402

HYDRAULIC SEAL FOR SALT WATER PONDS

Paul J. Muzychenko, Covina, and George M. Mallan, La Verne, both of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed July 16, 1971, Ser. No. 163,329
Int. Cl. E02b *3/00*; E02d *3/00*
U.S. Cl. 61—1 R 5 Claims



A technique is provided for reducing hydraulic leakage from earthen solar brine concentration ponds by application of a layer of phosphate slimes in an amount in the range of

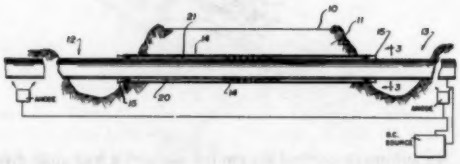
from about 1 to 3 pounds per square foot to the bottom of the pond for reducing permeability of the earth. Preferably the phosphate slimes are applied by pumping in a thin slurry of phosphate slimes which are then permitted to settle. A portion of the slimes may be mixed with underlying earth, if desired. Preferably a permanent layer of precipitated salts is built up over the layer of phosphate slimes.

3,774,403

SYSTEM FOR ROADBED TRAVERSING BY PIPELINE

Ralph H. Cushing, Omaha, Nebr., assignor to Northern Natural Gas Company, Omaha, Nebr.

Filed Sept. 8, 1971, Ser. No. 178,644
Int. Cl. F16l *1/00, 58/00*
U.S. Cl. 61—72.7 **8 Claims**



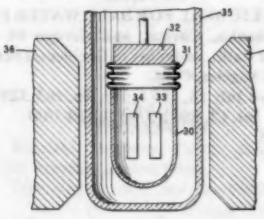
A casing pipe is extended laterally in a roadbed beneath the roadway, a pipeline smaller than the casing pipe is extended through the casing pipe and the space between the exterior surface of the pipeline and the interior surface of the casing pipe is filled with polymeric electrically nonconductive material.

3,774,404

ADIABATIC MAGNETIZATION COOLING NEAR ABSOLUTE ZERO

Laurence Richard Walker, Somerset, and Russell Erwin Walstedt, Mercer, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 19, 1971, Ser. No. 126,015
Int. Cl. F25b *21/02*
U.S. Cl. 62—3 **6 Claims**



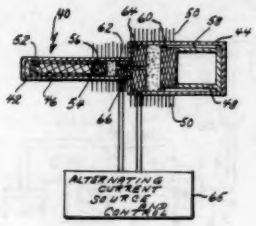
Cryogenic temperatures within one millidegree of absolute zero are attained by a combined application of pressure and magnetic field to He^3 which has been precooled to below 15 millidegrees. The pressures required are above 33.8 atmospheres and the magnetic fields are between 30 kilogauss and 80 kilogauss.

3,774,405

MAGNETICALLY DRIVEN CRYOGEN VUILLEUMIER REFRIGERATOR

Bruno S. Leo, Santa Monica, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 9, 1971, Ser. No. 178,866
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **3 Claims**



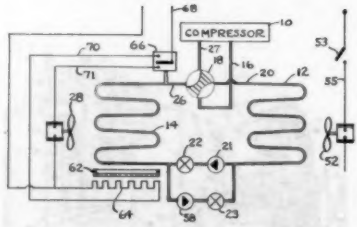
A magnetically driven cryogenic refrigeration system using the Vuilleumier cycle having hot and cold gas displacer with incorporated regenerators, each displacer positioned in a cylinder and having a permanent magnet in its base, each cylinder having an electro magnet, powered by an alternating power source located at one end and a chamber connecting the hot and cold cylinders for allowing the gas to pass between them.

3,774,406

CONDENSATE COLLECTOR PAN HEATING

Joseph Reitblatt, Wilmington, N.C., assignor to The Singer Company, New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,310
Int. Cl. F25d *21/06*
U.S. Cl. 62—155 **8 Claims**



A refrigerant evaporator defrost mechanism having improved control means for keeping the drain pan heater energized for a predetermined delay period following termination of the defrost cycle. The prolonged heating of the pan prevents ice from forming as might impede flow of condensate into the drain.

3,774,407

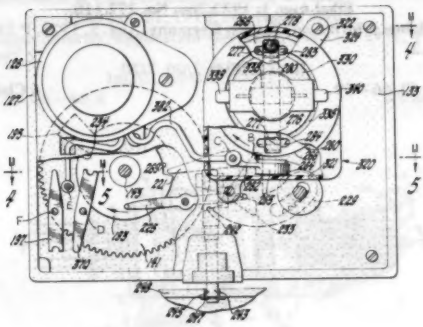
VISCOUS FLUID TIMER FOR TRAY ICE MAKER

James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1972, Ser. No. 302,875
Int. Cl. F25c *1/10*
U.S. Cl. 62—157 **5 Claims**

A viscous fluid timer useful for a refrigerator automatic ice maker having a magnetic member movable in the fluid at a

controlled rate under the influence of gravity where its presence will attract a magnetic switch to a closed condition to initiate the ice harvesting cycle of the ice maker. Thermostatic means are controlled such that upon the occurrence of a



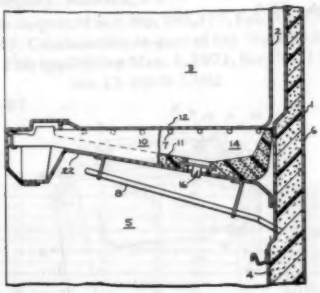
predetermined temperature the timer operates to interrupt the travel of the movable magnetic member whereby the viscous fluid timer is sensitive to the ice making temperature of the refrigerator.

3,774,408

TWO-TEMPERATURE REFRIGERATOR INCLUDING MOISTURE CONTROL MEANS

Leslie L. Pruehs, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 18, 1972, Ser. No. 289,818
Int. Cl. F25d 21/14
U.S. Cl. 62—285 **2 Claims**



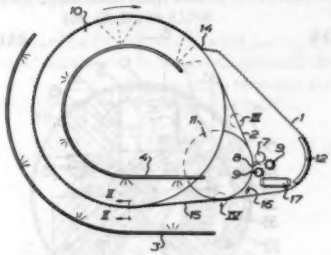
A refrigerator including an upper freezer compartment, a lower fresh food compartment and an insulating defrost water receptacle positioned between the compartments for collecting defrost water formed by the melting of frost during defrosting of the freezing compartment. The receptacle includes a plastic drain means for transferring the water to the fresh food compartment and having an inlet formed of a plurality of perforations which are normally sealed by the frost and ice formed therein during normal refrigerating operation of the refrigerator.

3,774,409

DEEP-FREEZING APPARATUS

Per-Oskar Persson; Per Sture Astrom, both of Helsingborg, and Lennart S. A. Emgard, Raa, all of Sweden, assignors to Frigoscandia Contracting AB, Helsingborg, Sweden

Filed Oct. 4, 1971, Ser. No. 185,945
Claims priority, application Sweden, Oct. 8, 1970, 13623/70
Int. Cl. F25c 5/02
U.S. Cl. 62—320 **6 Claims**



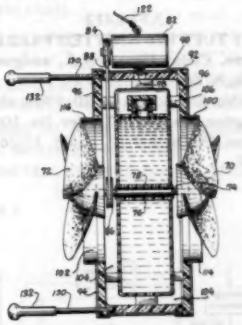
An apparatus for deep-freezing semi-fluid foodstuffs comprises a freezing device and two co-operating endless tracks which are coextensive over part of their length so as to form between them a fixed space for the foodstuff, the foodstuff in said space being frozen to a continuous cake. The apparatus also has means for detaching the continuous cake from the tracks and for breaking it into pieces.

3,774,410

PORTABLE AIR COOLER AND DEHUMIDIFIER

Daniel Hans, New York, N.Y., assignor to Area Conditioner Corp., New York, N.Y.

Filed June 21, 1971, Ser. No. 154,973
Int. Cl. F25d 17/06
U.S. Cl. 62—426 **9 Claims**



A portable air cooler and dehumidifier, comprising at least one closed container enclosing a refrigerant having a latent heat of fusion value below that of ice, said container having at least one wall which serves as a heat exchanger, and at least one blower which causes relatively warm and humid ambient air to pass across said heat exchanger wall, thereby lowering the temperature of the ambient air below its dew point and condensing and removing at least some of its moisture content, and causing a flow of the relatively cooled and dehumidified air in a predetermined direction.

3,774,411
DRIVE COUPLINGS

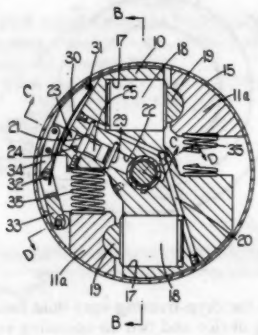
Ronald Phillips, Northolt, and Zdzislav Stanislav Miracki, Finchley, London, both of England, assignors to Simms Group Research & Development Limited, London, England

Filed Sept. 23, 1971, Ser. No. 183,056

Claims priority, application Great Britain, Sept. 30, 1970, 46,409/70

Int. Cl. F16d

U.S. Cl. 64—25 **6 Claims**



A coupling for use in a fuel injection pump comprises a pair of members and a fluid pressure operable piston acting intermediate the members. The supply of fluid under pressure of the pistons is controlled by a valve member which is disposed to be influenced by centrifugal force. The motion of the valve member under the action of centrifugal force is resisted by a leaf spring and the force exerted by the leaf spring is adjustable by means of a roller which co-operates with a surface on a member in such a manner that as the centrifugal force increases and the piston moves to effect relative movement of the members, the roller will move to increase the force exerted on the valve element thereby to establish an equilibrium.

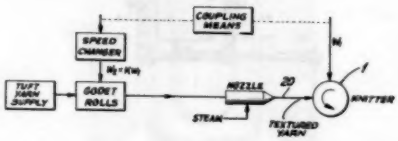
3,774,412
JET TUFT RIB KNITTED FABRIC

Daniel Schichman, Cedar Grove, N.J., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 851,551, Aug. 20, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,539

Int. Cl. D04b *9/12, 15/48, 35/26*

U.S. Cl. 66—9 R **4 Claims**



A method and apparatus for making a tufted knitted fabric having the tufts locked by the wales of the rib-knitted backing. The backing is knitted on the dial and cylinder of a knitting machine. A hot fluid jet aspirator means texturizes the tufting yarn while positioning it between the yarns of the backing as said backing yarns are held between the dial and cylinder needles.

3,774,413
MECHANICAL SWITCHING AND RATCHET ARRANGEMENT FOR MUTUALLY-EXCLUSIVE FUNCTIONS

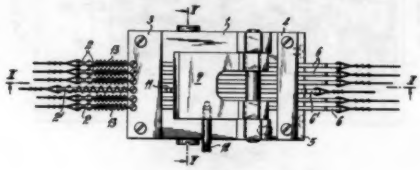
Wilhelm Kemmler, Reutlingen, Germany, assignor to H. Stoll and Company, Reutlingen, Stollweg, Germany

Filed Aug. 1, 1972, Ser. No. 277,119

Claims priority, application Germany, Aug. 5, 1971, P 21 39 132.2

Int. Cl. D04b *7/00, 7/20*

U.S. Cl. 66—69 **6 Claims**



A mechanical switching and ratchet device of the type for carrying out mutually exclusive functions, for example for selective needle bed shogging on flat knitting machines. A plurality of selector jacks are longitudinally slidable on a jack guide and each has associated with it a switch jack. A ball blocking device permits any one, but only one of the selector jacks to be moved longitudinally at any given time. When a selector jack is moved, it carries with it its switch jack which switch jack remains in the moved position even though its selector jack then moves back to its original position. A locking pawl is provided for holding the switch jacks in the original or the moved positions thereof.

3,774,414
KNITTING MACHINE WITH WEFT INSERTION

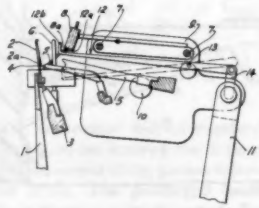
Karl Vogel, Volkerstr. 16, Helmbrechts, Germany

Filed May 26, 1972, Ser. No. 257,356

Claims priority, application Germany, June 18, 1971, P 21 30 130.4

Int. Cl. D04b *23/12*

U.S. Cl. 66—84 A **4 Claims**



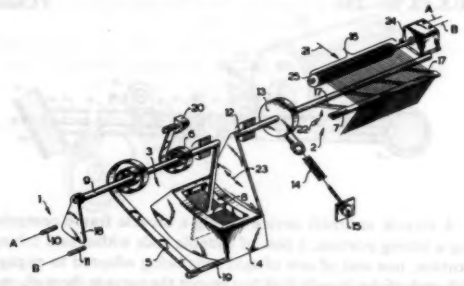
An improvement in a Raschel machine wherein pins or separate holding elements are provided with a drive mechanism which raises the butts about the continuously driven thread so that during the rocking motion of the thread guide, the pins or holding elements pass through beneath the presented thread such that the outlet orifice of the thread guide is arranged above the thread presenter during the racking motion.

3,774,415

DEVICE FOR WINDING OR UNWINDING MATERIAL CONDUCTED IN WEB OR LINEAR FORM, PARTICULARLY GROUPS OF TEXTILE THREADS

Josef Derichs, Monchengladbach, Germany, assignor to W. Schlafhorst & Co., Monchengladbach, Germany

Filed Jan. 21, 1972, Ser. No. 219,665
Claims priority, application Germany, Jan. 23, 1971, P 21 03 107.2
Int. Cl. D04b *23/00, 27/00*
U.S. Cl. 66—86 A 2 Claims



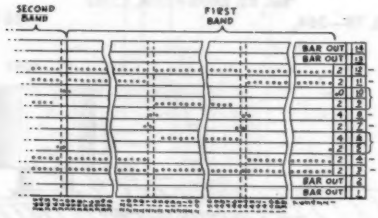
Device for winding on or unwinding from a coil member, material conducted in web or linear form includes drive means for driving the coil member, and control means for maintaining constant tension in the material, the control means comprising sensing means for monitoring the tension in the material, switching means for controlling the speed of the drive means, and means including a delay mechanism for interconnecting the sensing means and the switching means so as to vary the speed of the drive means to maintain constant tension in the material.

3,774,416

MACHINE KNITTING

Seymour C. Iitone, Birchrunville, Pa., assignor to Techniprises Company, Malvern, Pa.

Continuation-in-part of Ser. No. 705,377, Feb. 14, 1968, Pat. No. 3,566,619, Continuation-in-part of Ser. No. 694,655, Dec. 29, 1967. This application Mar. 1, 1971, Ser. No. 119,616
Int. Cl. D04b *23/02*
U.S. Cl. 66—87 3 Claims



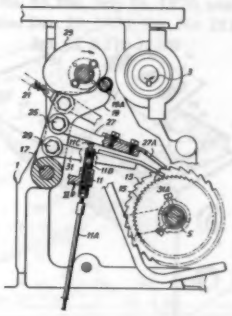
Tubular fabric is warp-knitted to have a plurality of narrow openings or tubular portions spaced laterally apart at an end of a single wide tubular portion and oriented parallel or perpendicular to that wide end. Knit articles are so formed with continuity of knitting action and stitch throughout and are useful for garments in which the wide tubular portion surrounds at least part of the trunk or body of a wearer thereof and the narrow openings or tubular portions accommodate adjacent parts of the wearer's limbs. Examples include tights, panties, panty hose, panty girdles, leotards, undershirts, sweaters, ski pants, and similar outer and undergarments.

3,774,417

PATTERN MECHANISM FOR KNITTING MACHINES

Franco Bini, Firenze, Italy, assignor to Bille S.P.A., Firenze, Italy

Filed Jan. 28, 1972, Ser. No. 221,567
Claims priority, application Italy, Feb. 6, 1971, 9355 A/71
Int. Cl. D04b *15/66*
U.S. Cl. 66—155 5 Claims



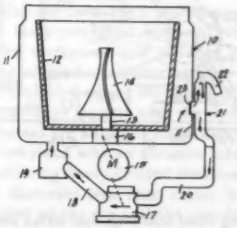
A pattern multiplier to reduce the number of plain links of the chain on a circular knitting machine wherein main and auxiliary ratchets intermittently advance the chain sprocket with the main ratchet advancing the chain greater distances when chain controls of the knitting are required and with the auxiliary ratchet advancing the chain lesser distances when no controls of the knitting are required. The angular pitch of the teeth of the main ratchet is twice that of the teeth of the auxiliary ratchet so the former advances the chain twice the distance of the advance by the latter. Cams on the chain, via a flexible cable, act to raise the main pawl out of action thereby permitting the auxiliary pawl and auxiliary ratchet to continue the advance of the chain.

3,774,418

INTEGRAL SELF-CLEANING FILTER AND SIDE CHECK VALVE FOR AUTOMATIC WASHER

William Ohmann, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 28, 1972, Ser. No. 238,890
Int. Cl. D06f *39/10*
U.S. Cl. 68—18 F 7 Claims



A diaphragm self-cleaning filter for a domestic appliance uses the non-filtering side of the diaphragm as a valve member

and provides an integral check valve during flushing of the filter. Fluid pressure acts on the back side of the diaphragm to provide a biasing force.

3,774,419

WEB TREATING APPARATUS

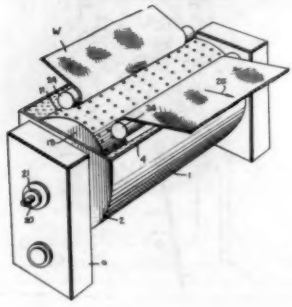
Valentin Appenzeller, Kempen/NDRRH, Germany, assignor to Edward Kusters Maschinezfabrik, Krefeld, Germany

Filed Mar. 24, 1972, Ser. No. 237,958

Claims priority, application Germany, Aug. 7, 1971, P 21 39 651.0

Int. Cl. B05c 3/132

U.S. Cl. 68—158 10 Claims



A treating apparatus for continuously traveling webs, such as textile webs being washed, has a drum about which the web is partially wrapped while immersed in a liquid and which is radially oscillated through an eccentric drive which is rigid in a radial direction to impart the radial oscillation to the drum and which in addition drives the drum variably frictionally in a rotative direction to force the drum to rotate at a peripheral speed which may be adjusted to correspond to the traveling speed of the web.

3,774,420

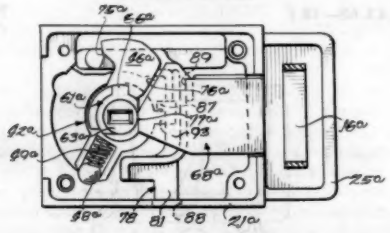
INTERLOCKING DEAD BOLT LOCK AND STRIKE

John L. Orr, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed June 3, 1971, Ser. No. 149,714

Int. Cl. E05b 63/00, 65/06

U.S. Cl. 70—104 18 Claims



An interlocking dead bolt lock and strike assembly having a lock housing enclosing a rotatable actuator for a lock bolt reciprocable between a retracted and a dead-locked position, an idler cooperating with the actuator for a key-operated lock actuation, and an extension on the housing acting to enclose the strike and cover the lock bolt in its projected dead-locked position. The housing may also include a reciprocable flag indicating when the bolt is projected, and an interior tumbler lock mounted on the housing which, when turned to one position allows the bolt to be operated by an exterior tumbler lock, and when rotated to a position 180° therefrom, prevents the exterior tumbler lock from operating the lock bolt.

3,774,421

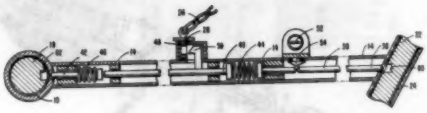
INTERNAL TRI-LOCK BICYCLE LOCKING SYSTEM

Raymond E. Stephens, Jr., 14840 Sunset Blvd., Pacific Palisades, Calif.

Filed July 17, 1972, Ser. No. 272,480

Int. Cl. B62h 5/06, 5/10; E05b 71/00

U.S. Cl. 70—234 7 Claims



A bicycle antitheft device having a bicycle frame comprising a tubing portion, a pair of slidable rods within said tubing portion, one end of one of said rods being adapted to engage the neck of the bicycle fork to prevent the turning thereof, one end of the other of said rods being adapted to engage the sprocket mechanism to prevent the rotation thereof, means within said tubing for biasing said rods so that said ends are not engaged by said neck and sprocket mechanism, a key operated opening external to said tubing and mounted thereon, means for overcoming said means for biasing said rods in operable relation with said key operated opening said means for overcoming causing engagement of said ends of said rods with said neck and sprocket mechanism upon the turning of a key within said key operated opening, an opening in said tubing for receiving a portion of a means for wrapping and retaining the bicycle to a stationary external object, means within said opening in said tubing for engaging said portion of said means for wrapping and retaining, said means for engaging being brought into engagement with said portion by the turning of said key.

3,774,422

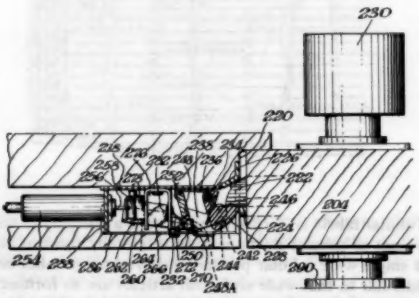
ELECTRONIC LOCKING ARRANGEMENT

Dennis L. Hogan, and Herschel T. Hochman, both of St. Petersburg, Fla., assignors to American District Telegraph Company, Jersey City, N.J.

Continuation-in-part of Ser. No. 131,056, April 5, 1971. This application Mar. 23, 1972, Ser. No. 237,331

Int. Cl. E05b 47/06, 15/02

U.S. Cl. 70—264 16 Claims



An electronic locking arrangement includes a strike latch for locking engagement with a latch bolt of a door. Stop means

are provided to inactivate the strike latch and maintain it in its locking position, while mechanical puller means disengages the stop means in response to electronic actuating means.

3,774,423

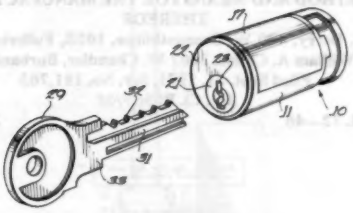
RETAINING MEANS FOR A LOCK CYLINDER PLUG

John L. Orr, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Apr. 3, 1972, Ser. No. 240,410

Int. Cl. E05b *9/04, 19/04*

U.S. Cl. 70—375 **6 Claims**



A method of retaining a rotary plug within the cylinder of a lock cylinder assembly where the lock cylinder has a cylindrical opening extending therethrough to receive a cylindrical plug having a stop only at the rear end thereof to align the holes or slots in the plug with the corresponding holes or slots in the cylinder. With the key removed, the tumblers biased across the shear line between the plug and cylinder retain the plug in the cylinder and, when the key is inserted into the plug to align the ends of the tumblers with the shear line and release the plug, a stop on the key extending beyond the plug's diameter to engage the cylinder face prevents rearward movement of the plug in the cylinder.

3,774,424

KEY-OPERATED MECHANICAL LOCK

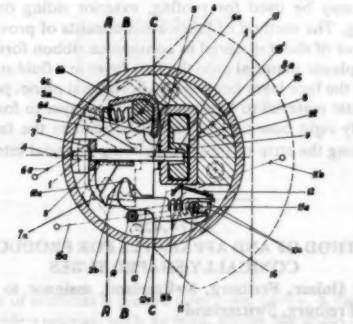
Kurt Ehrat, Scheuchzerstrasse 28, Zurich, Switzerland

Filed Nov. 18, 1971, Ser. No. 199,854

Claims priority, application Switzerland, Nov. 20, 1970, 17230/70

Int. Cl. E05b *19/18, 25/00*

U.S. Cl. 70—383 **13 Claims**



Key-operated mechanical lock of the kind wherein the actual information of the key is sensed by means of a mechanical scanner having a sensing element for each information-conveying position of the key and wherein the positions of the sensing elements are compared with the required information for opening the lock, which required information is stored in the lock in a mechanical storage means, the lock being ready for opening when the actual and required informations coincide. The invention provides for a locking mechanism for the sensing elements which locks the sensing elements after each sensing movement in their relative positions for at least the period of time required for the comparison of the two informations.

3,774,425

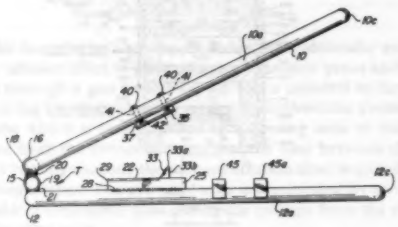
PORTABLE SHAPING TOOL

Joseph Veneziano, 6517 Arden Road, Cleveland Heights, Ohio

Division of Ser. No. 55,386, July 16, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,594

Int. Cl. B21d *31/00*

U.S. Cl. 72—326 **7 Claims**



A portable shaping tool for impressing shapes into sheet metal and the like includes frame members hinged together at one end. The frame members are tubular in cross section and are hinged by the insertion of the ends of one frame member into the respective ends of a tube connected to the other frame member. One frame member carries an element for shaping or for shaping and cutting. The other frame member carries a die plate in which the die is an opening through the plate having the proper dimensions to receive the shaping element. A particular application for the tool when a cutting and shaping element is employed is the punching of louvers in aluminum siding.

3,774,426

APPARATUS FOR AND METHOD OF FORMING A WORKPIECE

John M. Jezik, Washington Township, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1971, Ser. No. 127,699

Int. Cl. B21d *22/28*

U.S. Cl. 72—42 **64 Claims**

An apparatus for and method of forming a workpiece are disclosed.

A. The apparatus for forming a workpiece has a die assembly having a body provided with a cavity adapted to receive the formed workpiece and a die at one end of the body, the die being adapted to register with the workpiece and the cavity and utilized for forming the workpiece. A ram is adjacent the die assembly in registry with the workpiece and the die. Lubricating means are adjacent the workpiece for coating one side of the workpiece with an abrasive lubricant having a liquid vehicle containing finely divided abrasive particles. The particles have a diameter less than about five microns to prevent one member of the die and the ram from picking up workpiece particles during the forming operation. The ram is operable to move the workpiece through the die and into the cavity to form the workpiece without embedding the abrasive particles in the one side of the workpiece thereby eliminating weakening of the wall of the one side of the formed work-

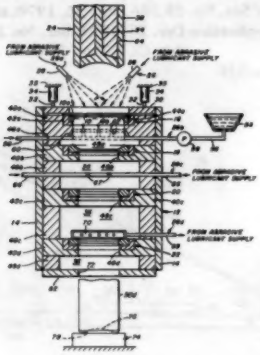
piece, contamination of the one side of the workpiece with abrasive particles and reduced reflectivity of the one side of the formed workpiece.

B. A method of forming a workpiece includes the steps of:

a. receiving the workpiece in a die assembly having a body provided with a cavity adapted to receive the formed workpiece and a die at one end of said body registering the workpiece with the die preparatory for forming the workpiece;

b. positioning a ram adjacent the die assembly in registry with the workpiece and the die;

c. lubricating the workpiece on one side of the workpiece



with an abrasive lubricant having a liquid vehicle containing finely divided abrasive particles, the particles having a diameter less than five microns to prevent one member of the die and the ram from picking up workpiece particles during the forming operation; and

d. moving the ram to move the workpiece through the die and into the cavity to form the workpiece without embedding the abrasive particles in the one side of the workpiece thereby eliminating weakening of the wall of the one side of the formed workpiece, contamination of the one side of the workpiece with abrasive particles and reduced reflectivity of the one side of the formed workpiece.

3,774,427

METHOD OF PRODUCING TIN LAYERS OR TIN ALLOY LAYERS ON COPPER OR COPPER ALLOY WIRES BY HOT TIN PLATING

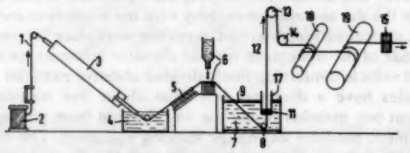
Horst Schreiner, and Henryk Fidos, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 10, 1970, Ser. No. 88,284

Claims priority, application Germany, Nov. 13, 1969, P 19 57 034.4

Int. Cl. B21c *37/04*; B21f *19/00*

U.S. Cl. 72—47 **2 Claims**



The invention relates to a method and a device for tin plating copper jump wires. The copper wire passes a tin bath and is guided through a profiled stripping nozzle. Following the tin plating, the copper wire is passed through at least one stretching stage wherein the diameter of the copper wire is reduced by pulling. This method affords a simple way of producing tin plated wires of small diameter. The tearing of wires with small diameter during the tin plating process is eliminated and the expensive production of profiled stripping nozzles with small bore diameters is avoided. The copper wires which are tin plated according toe the present invention have a uniform tin layer of a thickness >3 μm and are extremely solderable.

3,774,428

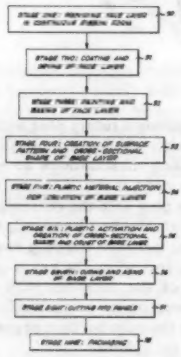
THERMALLY INSULATED BUILDING MATERIAL AND METHOD AND MEANS FOR THE MANUFACTURE THEREOF

Carl E. Derry, 400 W. Orangethorpe, 105B, Fullerton, Calif., and William A. Childs, 3007 W. Chandler, Burbank, Calif.

Filed Sept. 21, 1971, Ser. No. 181,703

Int. Cl. B05c *9/08*

U.S. Cl. 72—46 **24 Claims**



There is disclosed a thermally insulated, fire-resistant building material, a method for manufacturing the building material, and apparatus for use in such manufacture. The building material comprises a base layer of substantially rigid, lightweight, foamed, plastic material, having a hard crust on opposite sides thereof, and a face layer of weather-resistant sheet material bonded to one side of the base layer, the surface of the face layer having a pattern therein simulating the surface grain of a naturally-occurring building material. According to one embodiment of the invention, the building material is made in a continuous, elongated sheet and then cut into panels simulating a shingle or shake type structure, which panels may be used for roofing, exterior siding or interior paneling. The method of fabrication consists of providing the face layer of sheet material in continuous ribbon form, injecting the plastic material onto the face layer in a fluid state while moving the face layer linearly in a horizontal plane, permitting the plastic material to harden on the face layer to form a substantially rigid base layer which is bonded to the face layer, and cutting the strip of finished building material into desired lengths.

3,774,429

METHOD OF AND APPARATUS FOR PRODUCING CONICALLY SHAPED TUBES

Helmut Holzer, Freiburg, Switzerland, assignor to Polytype AG, Freiburg, Switzerland

Filed Mar. 7, 1972, Ser. No. 232,557

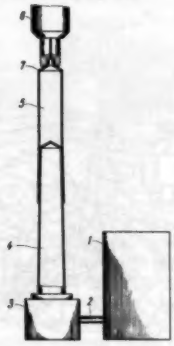
Claims priority, application Sweden, Mar. 8, 1971, 2936/71

Int. Cl. B21d *51/10*

U.S. Cl. 72—56 **11 Claims**

In forming conically or frusto-conically shaped tubes, the tubes are pressed by a transferring device onto an axially ex-

tending frusto-conically shaped hollow mandrel and vibrations are generated and passed into the mandrel through a hydraulic system and a pressure chamber attached to the mandrel. The vibrations in the mandrel effect the conical widening action on the tube. The vibrations can be produced by a hydraulically or



pneumatically controlled electromagnet, by controlled pumps and valves, or by a device for producing controlled explosions. Further, axially extending grooves or ribs can be formed in the tube by providing corresponding surfaces on the exterior surface of the mandrel.

3,774,430

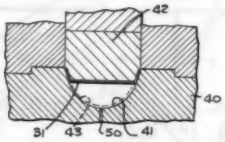
METAL FORMING

Walter D. Greer, Lynwood, and Richard C. Schlicht, Seal Beach, both of Calif., assignors to Greer Products, Inc., Los Angeles, Calif.

Continuation of Ser. No. 511,484, Dec. 3, 1965, abandoned. This application Dec. 1, 1967, Ser. No. 692,627

Int. Cl. B21d *22/10*

U.S. Cl. 72—60 23 Claims



A sheet of material is placed over a die cavity. A ram made of malleable material, such as lead, forces the sheet into the cavity. The force of the ram, progressing inwardly from the edges of the sheet toward the center of the cavity, moves the sheet downward and inward into the cavity, without appreciable change in the thickness of the material at any point. The sheet may thus be worked in cold condition, either in one or a succession of steps, without requiring heat treatment.

3,774,431

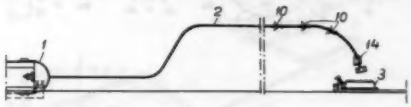
METHOD OF MANUFACTURING COPPER TUBES BY MEANS OF HYDROSTATIC EXTRUSION AND PRESS EQUIPMENT FOR CARRYING OUT THE METHOD

Ingemar Stromblad, and Rolf Hogland, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed July 10, 1972, Ser. No. 270,438

Int. Cl. B21c *31/00*

U.S. Cl. 72—60 8 Claims



In the manufacture of copper tubes by hydrostatic extrusion, a tubular billet is inserted in an extrusion press and extruded through a gap between a die and a mandrel to form a tube having the desired cross-section by hydrostatic pressure. The tube which is formed is led to a cooling zone at such a distance from the extrusion press that the time between shaping and cooling exceeds the recrystallization time required for annealing copper. The extruded tube is surrounded by an inert gas within a conductor tube during the passage from the press to the cooling zone.

3,774,432

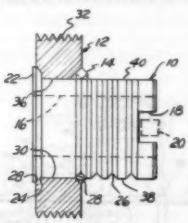
COMPOSITE THREAD ROLL

Bruce D. Bedker, 48141 Fuller Street, Mt. Clemens, Mich.

Filed Mar. 8, 1972, Ser. No. 232,783

Int. Cl. B21h *3/04*

U.S. Cl. 72—103 10 Claims



A composite thread rolling tool assembly comprising a hub and a removable thread forming sleeve. The sleeve has flat end surfaces permitting a plurality of sleeves to be assembled on an arbor for forming the threads thereon. The sleeve is retained on the hub by a snap ring having inclined end surfaces.

3,774,433

METHOD OF ROLLING E.G. LIGHT SECTIONS ON A MILL AND A MILL FOR USE WITH THE METHOD

Heinrich Pauels, Dusseldorf-Benrath, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed June 5, 1972, Ser. No. 259,825

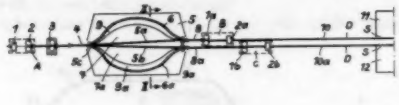
Claims priority, application Germany, June 5, 1971, P 21 28 036.4

Int. Cl. B21b *37/00, 1/12*

U.S. Cl. 72—203 11 Claims

It is known to roll light sections by rolling the material on continuous roughing and finishing mills in succession, sub-

sequently cutting the material into lengths and conveying them transversely in a cooling bed. The invention increases the capacity of the rolling mill by providing two parallel-axis finishing mills with a shear and a switch between the roughing mill and the finishing mill, the shear being actuated when the leading end of the respective length is at least within the



respective finishing mill, and the length being initially rolled in the finishing mill at a speed equivalent to that of the roughing mill, but after a substantial proportion of the length has passed through the finishing mill, the finishing mill speed being substantially reduced, the next succeeding length meanwhile being fed through the other finishing mill.

3,774,434

ARRANGEMENT FOR BENDING OF BARS OF REINFORCING STEEL MATS

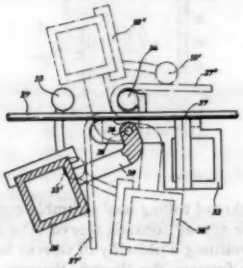
Rudolf Bock, Palmerstr. 8, Holzgerlingen, Germany

Filed Sept. 11, 1972, Ser. No. 288,152

Claims priority, application Germany, Sept. 14, 1971, P 21 45 809.3

Int. Cl. B21d *7/24*

U.S. Cl. 72—306 **16 Claims**



Arrangement for bending of reinforcing steel mats with a fixed support beam having a bearing surface for receiving and supporting a reinforcing steel mat. A plurality of spaced hook-like bending mandrels are coaxially operatively mounted over the bearing surface. A pivoting bar engaging beam, having a pivot axis disposed parallel to the bearing surface, is provided with a plurality hook-like bar bending members each of which coacts with a hook-like bending mandrel. The supporting beam being further provided with a multipart bending shoulder and the pivoting bar engaging beam being swingably at least on one side of the bearing surface behind the multipart bending shoulder.

3,774,435

METHOD AND APPARATUS FOR MAKING BEARINGS

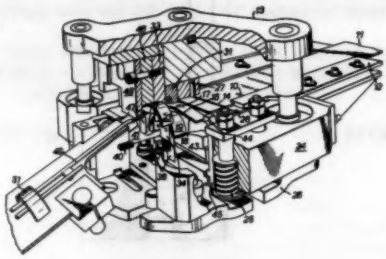
William Wales, and Alistair Robert McCallum, both of Kilmarnock, Scotland, assignors to The Glacier Metal Company Limited

Filed July 20, 1972, Ser. No. 273,634

Claims priority, application Great Britain, July 21, 1971, 34,089/71

Int. Cl. B21d *7/04*

U.S. Cl. 72—331 **13 Claims**



This invention is a machine and a method for forming part cylindrical half bearing shells from a continuous elongated strip of lined material in which the strip is moved forward into the press in steps and each movement of the press effects a number of different operations on blanks constituted by successive transverse lengths of the strip. In one pressing step a movement of a die perpendicular to the direction of stepping first severs a blank from the rest of the strip and then forms it to shape in a coining operation.

3,774,436

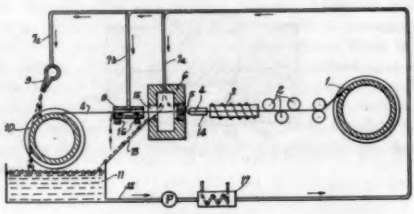
DEVICE FOR METAL TREATMENT

Evald Tviksta, Ullavagen 22, Hofors, Sweden

Filed Mar. 22, 1972, Ser. No. 237,153

Int. Cl. B21c *3/14*

U.S. Cl. 72—342 **5 Claims**



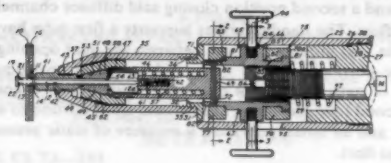
A device for removal of surface metal during passage of lengths of metal at elevated temperature through a shaving tool which engages the metal all around with means for cooling the metal as it issues from the shaving tool comprising a slotted tube mounted for movement into and out of the path of the metal with means for introducing a cooling fluid into the interior of the tube.

3,774,437

RIVET SETTING APPARATUS WITH AXIALLY MOVABLE COLLAR

Dale L. Young, 2950 Fox St., Denver, Colo.

Filed Mar. 2, 1972, Ser. No. 231,195
Int. Cl. B21j *15/26*
U.S. Cl. 72—391 12 Claims



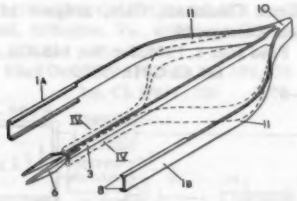
In apparatus for setting blind rivets including a mandrel-clamping chuck, a drive screw and split nut sections, there is provided a holding collar arranged around the nut sections and axially movable relative thereto. In a holding position the collar holds the nut sections firmly in an operative engagement with the drive screw without radial deformation under load. The nut sections are initially set by pressing the nut sections toward one another against the drive screw and springs move the collar axially to the nut-holding position once they have been moved together. The collar is inhibited from rearward axial movement and when the nut sections have moved a sufficient distance to set the rivet head and break the mandrel the collar is axially displaced relative to the nut sections to a released position so that it no longer holds the nut sections together and allows springs to spread the nut sections apart and return the nut sections to a forward starting position.

3,774,438

APPLICATOR FOR SURGICAL CLIPS

David Frederick Weston, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 20, 1970, Ser. No. 56,519
Claims priority, application Great Britain, July 29, 1969, 37,944/69
Int. Cl. B21d *9/08*; B25b *9/02*; A61b *17/12*
U.S. Cl. 72—410 1 Claim



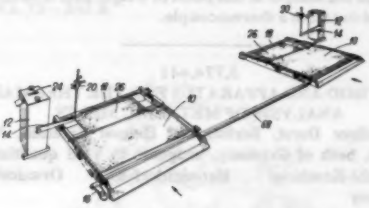
A hand-operated applicator for use with surgical clips, such as wound clips, comprising a pair of elongate members, one of which is capable of axial movement within a longitudinal cavity in the other, and a pair of jaws projecting from the cavity resiliently biased into an open position and connected to the inner elongate member so that the said axial movement causes the jaws to close against the bias. Clips are fitted into the jaws, preferably from a magazine. The applicator can be made entirely from plastic material but it may be preferred to make the small jaw members from steel. The cost could be low enough to allow the applicator to be supplied pre-sterilised and thrown away after one operation.

3,774,439

APPARATUS FOR ASSESSING THE DAMPING PERFORMANCE OF VEHICLE SUSPENSION SYSTEMS

Reginald Stanley Emerson, Buckingham, England, assignor to Leslie Hartridge Limited, Buckingham, England

Filed July 9, 1971, Ser. No. 161,020
Claims priority, application Great Britain, July 10, 1970, 33,706/70
Int. Cl. G01m *17/04*
U.S. Cl. 73—11 6 Claims



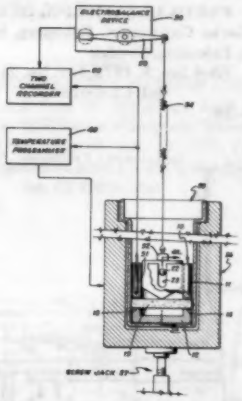
Apparatus for assessing the damping performance of a vehicle suspension system, comprising vehicle suspension-displacing means for bringing about an initial disturbing displacement of at least part of a vehicle suspension system, and indicating and/or recording means arranged to detect and aggregate all the resultant reciprocating movements of the vehicle body until those movements cease and to indicate and/or record the aggregated amount of movement.

3,774,440

INSTRUMENT FOR DETERMINING POLYMER DEFLECTION TEMPERATURES

Fred J. Martinelli, Menlo Park, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Jan. 10, 1972, Ser. No. 216,444
Int. Cl. G01n *3/20*, *25/00*
U.S. Cl. 73—15.6 1 Claim



An instrument for determining polymer deflection temperatures, said instrument comprising a container holding an elongated sample of the polymer in a suspended position between its sample-supporting side walls, together with a plunger slidably engaged within said container and having a lower, wedge-shaped end which initially comes to rest against the undeflected sample in a position transverse to the longitudinal axis of the sample. A heater is employed to progressively

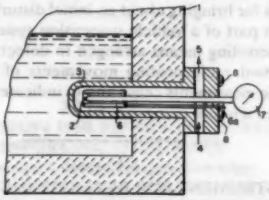
elevate the temperature of the sample until the same deflects under the weight of the plunger, together with means associated with the plunger for signifying the resulting downward movement thereof and means for determining the temperature of the sample as this movement of the plunger occurs. In one embodiment, this downward movement of the plunger is detected by an electrobalance so arranged that a small suspended weight, spring-connected to the balance arm, is fully supported by the plunger as the latter rests against the nondeflected sample. This support is removed as the plunger moves downwardly with sample deflection, thereby causing a weight gain to be recorded by the electrobalance. The temperature of the sample at this point of weight gain is simultaneously read out from a thermocouple.

3,774,441

METHOD AND APPARATUS FOR THE THERMAL ANALYSIS OF METALLIC MELTS

Hans-Rudiger Dorst, Berlin, and Helmut Zielinski, Muhlhausen, both of Germany, assignors to VEB qualities-und Edelstahl-Kombinet Hennigsdorf-Kr. Oranineburg, Germany

Filed May 6, 1971, Ser. No. 140,716
Int. Cl. G01n *25/04*; G01k *7/02*
U.S. Cl. 73—17 R **5 Claims**



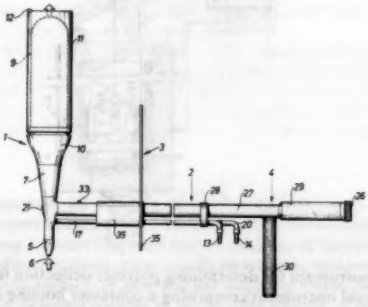
Method and apparatus for the thermal analysis of metallic melts, in particular molten carbon steels, involving the use of permanently immersed, non-expandable thermocouples.

3,774,442

PARTICLE SAMPLING DEVICES

Karl Axel Goran Gustavsson, Enkoping, Sweden, assignor to AB Bahco, Enkoping, Sweden

Filed Jan. 5, 1972, Ser. No. 215,514
Int. Cl. G01n *1/02*
U.S. Cl. 73—28 **9 Claims**



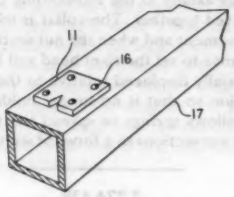
A device for taking a sample of particles from a flow of gas in a gas duct includes a handle carrying a front portion for insertion in said gas duct in the sampling operation, including a nose portion having an inlet opening for facing the gas flow, a through flow body through which extends a diffusor shaped channel extending from the inlet opening to a screen filter coupled to the down-stream end of said through flow body, and a valve including a cock inserted transversely in said diffusor channel and having an axis of rotation perpendicular to said diffusor channel and parallel to said handle. The handle carries an operating rod parallel to said valve cock rotation axis and connected between said valve cock and an operating knob on said handle for varying said cock between a first position providing no resistance to gas flow through said diffusor channel and a second position closing said diffusor channel to said gas flow. The handle further supports a first tube having an inlet in said diffusor channel between the inlet opening of said nose portion and said valve and an outlet providing a measure of static pressure of gas flow in said diffusor channel, and a second tube having an inlet in said front portion to said gas duct and an outlet providing a measure of static pressure in said gas duct.

3,774,443

ACOUSTIC EMISSION DAMAGE MEASUREMENT

Allen T. Green, Walnut Creek, and Alan S. Tetelman, Larkspur, both of Calif., assignors to Becton, Dickinson Electronics Company, Rutherford, N.J.

Filed June 19, 1972, Ser. No. 264,161
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.3 **3 Claims**



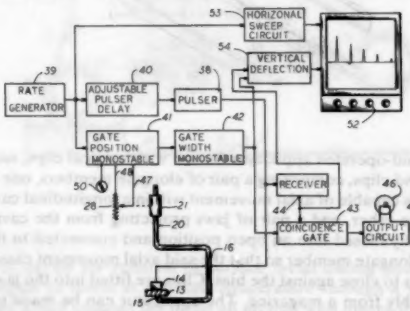
A precracked gage element is attached to a structural member to be monitored for damage and is continuously or periodically monitored to determine acoustic emission therefrom as a measure of fatigue damage of a structural member.

3,774,444

SYSTEM FOR DETERMINING SONIC VELOCITY IN SOLID MATERIALS

James T. Kent, Cincinnati, Ohio, assignor to Magnaflux Corporation, Chicago, Ill.

Filed June 1, 1971, Ser. No. 148,426
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.6 **8 Claims**



System for determining the sonic velocity and related characteristics of a sample of solid material such as malleable

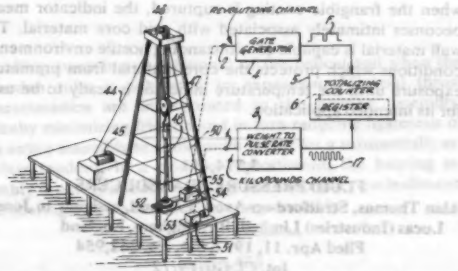
or ductile iron. A portable hand-carried unit has means engagable with opposite surface portions of a sample, sensing means for developing an electrical characteristic which varies as a function of the distance between the engagement means and ultrasonic transducer means for transmitting waves through the sample from one surface portion to the other and back again. The variable electrical characteristic and the time of transmission of the waves through the sample are compared by electrical measuring means.

3,774,445

METHOD AND APPARATUS FOR MONITORING THE WEAR ON A ROTARY DRILL BIT

Herbert A. Rundell, and James B. Davis, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,651
Int. Cl. E21b 47/00
U.S. Cl. 73—151 **9 Claims**



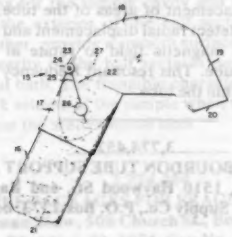
A method and apparatus for monitoring the wear on a rotary drill bit including means for measuring the revolutions of the drill string and the weight on the bit, and for obtaining the product thereof, such product being a measure of the wear on the bit. A pulse train is generated having a pulse rate proportional to the weight on the bit. Controlled portions of the pulse train are registered in a counter, the portions being proportional in duration to the number of revolutions turned by the bit, with the result that the accumulated count registered provides at any time the integrated product of weight and revolutions, as a measure of bit wear.

3,774,446

SYSTEM FOR MEASUREMENT OF VOLUME OF FLOW OF A FLOWABLE GRANULAR-LIKE MATERIAL

John A. Diehl, Arlington, Va., assignor to Richard H. Hayes, Talmadge, Ohio; a part interest

Filed Oct. 19, 1972, Ser. No. 299,078
Int. Cl. G01f 1/00
U.S. Cl. 73—194 R **9 Claims**



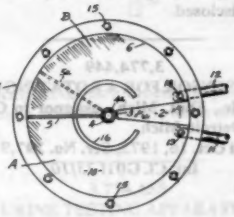
A system for measurement of volume of flow of a flowable granular-like material such as grain in a partially confining flow path, which system includes a vane positioned to be deflected by the material at a point in the flow path where it becomes virtually free of said confinement, the position of said vane establishing an analogue electrical signal which is converted to digital for read out.

3,774,447

FLUID FLOW RATIO AND PRESSURE RATIO INDICATING DEVICE

Eugene K. Fitch, Charlottesville, Va., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed May 30, 1972, Ser. No. 258,096
Int. Cl. G01f 1/00
U.S. Cl. 73—205 R **6 Claims**



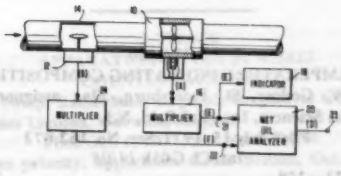
This instrument has a generally cylindrical casing member with an inner stop wedge for stopping rotation of an inner vane in either direction. A novel feature is an arcuate gas or other fluid discharge port in the bottom surface over which the rotatably mounted vane can travel in close proximity thereto. A suitable fluid inlet port is provided in the bottom surface on either side of the stop wedge and adjacent the wedge. The bottom surface may be part of a plate or disc screwed or otherwise fastened to the cylindrical casing portion or integral therewith. Similarly the upper closure member may be a disc attached to the cylindrical casing portion and having a central hole through which a shaft attached to the vane is rotatable. This shaft carries a pointer which indicates flow ratio or pressure ratio of the fluid on the respective faces of the vane which takes up a position depending upon the ratio of fluid flow through the two inlet ports. It is preferable that the vane be of aluminum or other light weight material. The vane can be cemented to the shaft or pressed into a slot in the shaft.

3,774,448

FLUID FLOW COMPENSATING METHOD AND SYSTEM

Edward W. Gass, and Fred W. Paramore, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 152,188, June 11, 1971, Pat. No. 3,743,946. This application June 15, 1972, Ser. No. 263,209
Int. Cl. G01f 1/00
U.S. Cl. 73—231 M **9 Claims**



A method and apparatus for generating an output signal selectively displaced in phase from an input signal wherein the phase displacement remains the same irrespective of changes in the input signal frequency. A reference signal related in am-

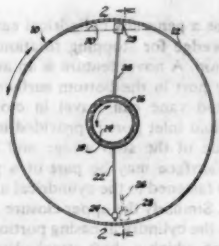
plitude to the frequency of the input signal and a comparing signal which varies at a predetermined rate for a period of time related to the frequency of the input signal are compared, and a pulse is generated in response to the comparison. More specifically, a capacitor is charged and discharged from alternately enabled positive and negative constant current sources during successive interpulse periods of the input signal. The voltage on the capacitor is stored at the end of each charging period and the varying voltage across the capacitor is compared with one or more percentages of the stored voltage to generate output pulses. The output pulses may be combined with the input signal to provide frequency multiplication or the percentage may be made variable to provide variable phase shifting. A system for increasing the resolution of measurements obtained from a digital transducer and a system for generating selectively phase shifted control signals are also disclosed.

3,774,449

FUEL LEVEL SENSOR FOR A ROTATING FUEL TANK

John A. Carol, Jr., Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1972, Ser. No. 297,917
Int. Cl. G01f *23/10*
U.S. Cl. 73—313 **3 Claims**



A fuel level sensor for a cylindrical fuel tank carried by a rotating tubular shaft. A first slip ring assembly includes a first slip ring which carries a potentiometer resistive element and a float which rotates the slip ring and the resistive element to an angular position relative to a vertical reference representing the level of fuel in the fuel tank. A second slip ring assembly includes a second slip ring which carries a potentiometer wiper arm cooperating with the resistive element and a weighted arm which maintains the second slip ring and the wiper arm at a predetermined angular position relative to the vertical reference. The resistive element and the wiper arm cooperate to present an impedance representing fuel level. Means are described for transferring a resistance signal representing the level of fuel from within the rotating fuel tank.

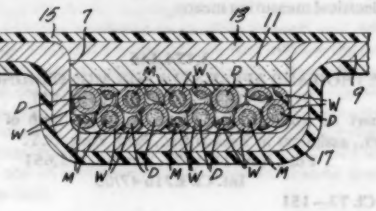
3,774,450

TEMPERATURE INDICATING COMPOSITION

Frank W. Godsey, St. Petersburg, Fla., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed July 15, 1971, Ser. No. 162,872
Int. Cl. G01k *11/08*
U.S. Cl. 73—358 **23 Claims**

An improved temperature indicator is provided which comprises a carrier having at least one but preferably a plurality of regions, each containing a substance consisting of a core material and a wall material encapsulating the core material. Each core material is a thermally responsive substance which undergoes change of state at precise and predetermined temperature and the wall material is a frangible coating which can be ruptured by the application of a relatively mild pressure. An indicator means overlies the temperature indicating portion of said indicator in association with said regions so that



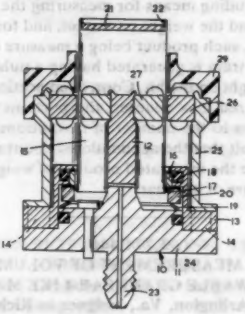
when the frangible coating is ruptured, the indicator means becomes intimately associated with said core material. The wall material is capable of withstanding hostile environmental conditions which protects the core material from premature exposure until the temperature indicator is ready to be used for its intended application.

3,774,451

FLUID PRESSURE TRANSDUCERS

Alan Thomas, Stratford-on-Avon, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 11, 1972, Ser. No. 242,954
Int. Cl. G01l *9/12*
U.S. Cl. 73—398 C **10 Claims**



A fluid pressure transducer has a tube of magnetic material which can be subjected internally to a fluid pressure. Electromagnetic stators provide a rotating magnetic field which causes radial displacement of areas of the tube. Sensors surround the tube to detect radial displacement and an associated circuit causes the magnetic field to rotate at the resonant frequency of the tube. This resonant frequency is dependent on the pressure within the tube.

3,774,452

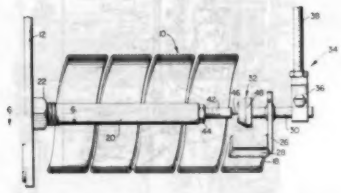
HELICAL COIL BOURDON TUBE SUPPORT ASSEMBLY

Aubrey R. Tullos, 1510 Haywood St., and Ray Dewitt, c/o Meter Service & Supply Co., P.O. Box 2373, both of Odessa, Tex.

Filed Nov. 22, 1971, Ser. No. 200,744
Int. Cl. G01l *7/04*; G01k *5/36*
U.S. Cl. 73—418 **14 Claims**

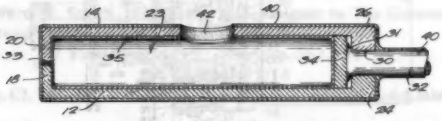
An improved Bourdon tube and support assembly including a rigid base plate with the pressure inlet end of a helical coil

Bourdon tube mounted on the base plate. A readout arm or measuring pointer is secured to the closed, reading output end of the Bourdon tube, a guide post is mounted on the base plate coincident with the axis of the helical coil Bourdon tube and a low friction coefficient bearing assembly interconnects the spindle and a readout arm drive post. The support assembly has structural and functional characteristics which eliminate



spiralling (weaving undulations) of the helical coil when the Bourdon tube is subjected to expansion. Minimal thrust characteristics are incorporated in the bearing assembly, thereby minimizing friction and in turn reducing hysteresis of the entire assembly to a minimum factor for a substantially errorless readout. In a primary embodiment, the bearing assembly is purely a radial bearing; in a secondary embodiment, the bearing may be a conical bearing assembly.

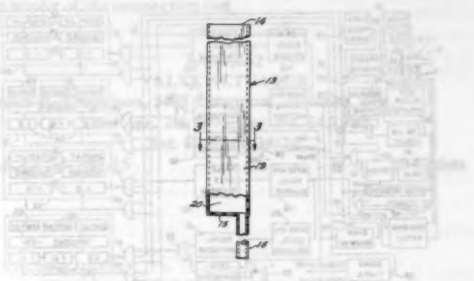
3,774,453
MOLTEN METAL SAMPLER
Richard A. Falk, 519 Westminster Dr., Waukesha, Wis.
Filed July 24, 1972, Ser. No. 274,352
Int. Cl. G01n *1/12*
U.S. Cl. 73—425.4 R **8 Claims**



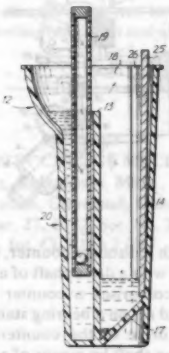
A cast sand cartridge for a sampling lance for molten metal comprises in one embodiment two cast sand half sections with opposed recesses which define a sample cavity. A refractory cement lining for the sample cavity and a refractory cement coating on the exterior of the half sections, secure the assembly together, provide a smooth surfaced sample and maintain the integrity of the half sections during immersion in a molten metal bath. The frangible character of the half section affords quick release of the sample when the sampling lance is removed from the molten metal bath.

3,774,454
STERILE PACKAGES FOR FRAGILE ARTICLES
Joseph Denman Shaw, 508 Church St., Brownsville, Pa.
Filed Nov. 22, 1971, Ser. No. 200,979
Int. Cl. G01n *9/12*
U.S. Cl. 73—444 **5 Claims**

There is disclosed a sterile package of semi-flexible transparent plastic material adapted to enclose fragile articles with exterior compression means surrounding an intermediate portion of the package to press against and firmly hold the article in the package. A package is also disclosed having the foregoing features which serves as a functional part or casing for a fragile article, such as a urinometer, when said article is put to its ultimate use.



3,774,455
URINE TESTING APPARATUS
David Seidler, 69-10 108th St., and Herbert B. Feldman, 108-21 69th Rd., both of Forest Hills, N.Y.
Filed Dec. 22, 1971, Ser. No. 210,820
Int. Cl. G01n *9/12*, *1/18*
U.S. Cl. 73—444 **9 Claims**

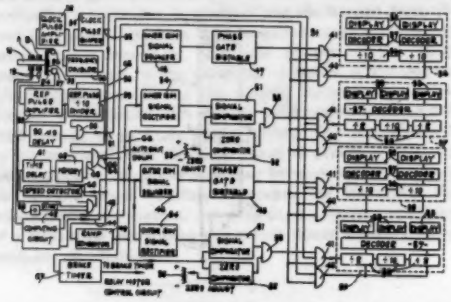


An apparatus for testing urine consists of a container and a float. The float, in combination with the container, makes it possible to measure the specific gravity of a urine sample. The container is designed for holding test strips impregnated with reagents. Sediment contained in the urine can be collected for microscopic examination.

3,774,456
APPARATUS FOR USE IN WHEEL COUNTERBALANCING
Brian Crump, Rotherham, England, assignor to GKN Transmissions Limited, Warwick, England
Filed Oct. 1, 1971, Ser. No. 185,794
Claims priority, application Great Britain, Oct. 3, 1970, 47,102/70
Int. Cl. G01m *1/22*
U.S. Cl. 73—462 **7 Claims**

In wheel counterbalancing apparatus a wheel is mounted in a pair of spaced bearings for rotation about reference axis and sensor means are provided for sensing reaction forces at each

of the bearings resulting from imbalance of the wheel. Means are provided for sensing when the wheel is at or approaching its maximum rotational speed and for transmitting a signal to



hold information displayed by digital displays tubes in a displayed state and at the same time to brake the drive to the wheel.

3,774,457

TACHOMETER WITH A DISTANCE COUNTER

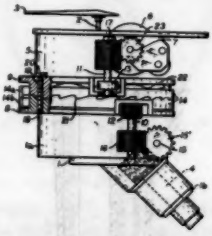
Heinrich Henss, Oberhochstadt; Edgar Maschke, Frankfurt am Main, and Bernd Wirbel, Bischofsheim, all of Germany, assignors to VDO Tachometer Werke Adolf Schindling GmbH, Frankfurt/Main, Germany

Filed June 21, 1971, Ser. No. 154,717

Claims priority, application Austria, June 22, 1970, 5617

Int. Cl. G01p *1/00, 3/42*

U.S. Cl. 73—490 **3 Claims**



A tachometer with a distance counter, in particular an eddy current tachometer with a drive shaft of a tachometer measuring device which comprises a counter stand receiving the distance counter and set on a bearing stand for the drive shaft. A speed reducing drive of the counter is operatively connected with the drive shaft by means of an intermediate shaft. The intermediate shaft driving the distance counter is divided into two shaft parts separately mounted in the bearing stand and the counter stand. A gear rim and a pinion are provided. The tachometer includes a pointer axle carrying a pointer. The gear rim is concentrically rotatably mounted about the pointer axle of the tachometer, and the shaft parts are coupled together by means of the pinion.

3,774,458

ACTUATOR DEVICE FOR USE WITH AN INTERVAL TIMER

Kiyoshi Kitai, Tokyo; Mitsuo Koyama, Yotsukaido-machi; Shogo Kato, Chiba-ken; Yuzuru Takazawa, Tokyo, and Shinji Nagaoka, Yotsukaido-machi, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

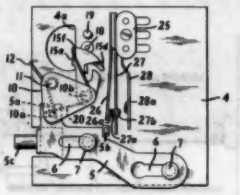
Filed Nov. 20, 1972, Ser. No. 307,866

Claims priority, application Japan, Nov. 18, 1971, 46/91887

Int. Cl. G05g *17/00;* **H01h** *3/12, 43/24*

U.S. Cl. 74—2 **7 Claims**

An actuator device for use with an interval timer comprises a manually displaceable setting member displaceable between a nonworking position and a working position and a locking lever for releasably locking the setting member in its working position whereby an output device may be actuated by the setting member when same is moved into its working position. The setting member is biased into its nonworking position by a biasing spring and is maintained in its working position against the restoring force of the biasing spring by the locking lever.



The locking lever is mounted for pivotal movement into a locking position in response to manual depression of the setting member to thereby prevent return movement of the setting member and is mounted for tilting movement to an unlocking position in response to either further manual depression of the setting member or in response to movement of an external output member to thereby permit the setting member to return to the nonworking position.

3,774,459

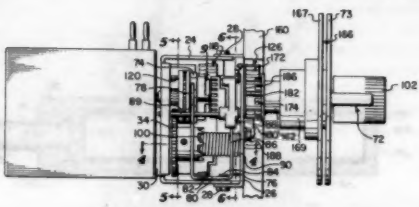
UHF TUNING MECHANISM

Alarico A. Valdettaro, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed Mar. 9, 1972, Ser. No. 233,148

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.54 **12 Claims**



A compact UHF tuning mechanism is provided for a continuously variable UHF tuner which has a small front panel profile and wherein the channel selector shaft is provided with a detent position for each of the seventy UHF stations. A counter-type stop mechanism which occupies a minimum amount of space ahead of the UHF tuner is provided to prevent the selector shaft from being moved beyond the ends of the UHF band.

3,774,460

COMPACT TRANSMISSION STRUCTURE

Edgar Paul Browning, and Lyle Robert Madson, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

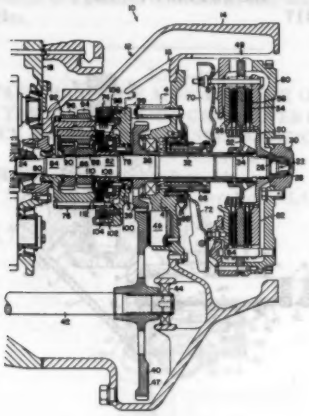
Filed June 9, 1972, Ser. No. 261,313

Int. Cl. F16h *37/00;* **F16d** *21/08*

U.S. Cl. 74—15.84 **9 Claims**

The drive train of a sixteen-speed transmission commences at the end of an engine crankshaft with a traction input drive shaft, which is coaxially received in a hollow PTO input drive shaft, and a dual clutch assembly operable for selectively connecting one or the other or both of the drive shafts for rotation with the crank-shaft. The PTO input drive shaft terminates ahead of a two-speed planetary transmission section which has

input gearing connected to an end of the traction input drive shaft and output gearing connected to a planetary output shaft. The PTO input drive shaft is connected for driving a PTO shaft which extends parallel thereto. An eight-speed transmission section includes parallel input, output and countershafts, the input shaft being axially aligned with and connected to the planetary output shaft. The transmission drive train is encased in an elongated housing having three spaced support walls which support the transmission shafts and planetary transmission section and which support and form a portion of control means for certain elements of the transmission.

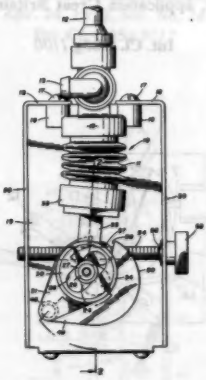


3,774,461

ADJUSTABLE DRIVING MECHANISM FOR VARIABLE OUTPUT PUMPS

Edward M. Smith, Mansfield, Ohio, assignor to The Gorman-Rupp Company, Mansfield, Ohio

Filed May 11, 1972, Ser. No. 252,356
Int. Cl. F16h *21/18*
U.S. Cl. 74—49 **6 Claims**



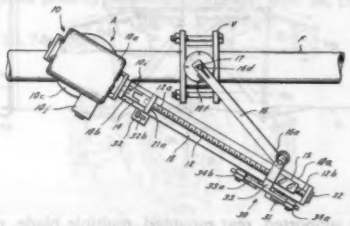
Mechanism for adjusting the stroke length of a variable positive displacement pump at any time without stopping the operation of the pump. A drive shaft mounted on a frame drives a crank, and a bearing on the end of the crank rides in an elongated slot in a driving arm attached to a connecting rod which imparts reciprocating movement to the pump. The outer end of the driving arm is pivoted to a control arm which is rotatably adjustably mounted on the frame to change the orientation of the elongated slot with consequent change in the stroke of the connecting rod.

3,774,462

VALVE ACTUATOR

James B. Thompson, 5405 Longmont, Houston, Tex.

Filed Apr. 20, 1972, Ser. No. 245,989
Int. Cl. F16h *29/20*
U.S. Cl. 74—89.15 **10 Claims**



Apparatus for operating a valve mounted in a flow line including a motor driving a threaded shaft having a traveling nut mounted thereon, support means supporting the motor so as to be substantially supported by the flow line such that the shaft is substantially free of extraneous forces; and, an actuating arm connecting the traveling nut to the valve whereby movement of the traveling nut opens and closes the valve.

3,774,463

AUTHORITY CHANGE MECHANISM

Richard Paul Heintz, Kalamazoo, Mich., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Mar. 27, 1972, Ser. No. 238,510
Int. Cl. F16h *21/44*
U.S. Cl. 74—96 **10 Claims**

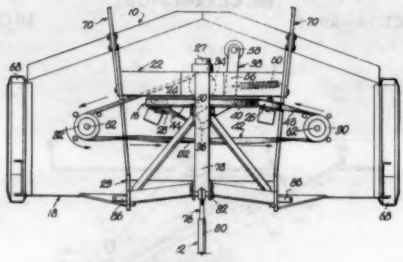
Authority change mechanism includes a relatively low ratio change mechanism interposed between an input shaft and output cam whose input range has been extended by the same factor as the ratio change mechanism. In the secondary high authority mode of operation, the same output command is achieved as in the primary mode at less input command. At higher input commands the output command in the high authority mode is greater than the maximum output in the primary mode, and by limiting use of the extended portion of the cam to the high authority mode, its configuration may be such as to increase the total output in the high authority mode by a much higher factor during high inputs for high maneuverability.

3,774,464

BELT DRIVEN, TRACTOR SUPPORTED IMPLEMENT

James Edson McCanse, and Stephen John Gecan, both of Oregon, Ill., assignors to Hesston Corporation, Hesston, Kans.

Filed Aug. 11, 1972, Ser. No. 279,861
Int. Cl. F16h 7/12
U.S. Cl. 74—242.1 A 21 Claims



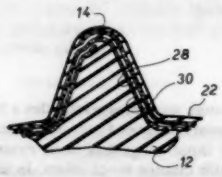
A tractor supported, rear mounted, multiple blade, rotary mower, is provided with a self-contained, belt driven power transmission utilizing a common support adapted to be carried in its entirety as well as raised and lowered as a unit by the power lift of the tractor, and driven by the power takeoff of the tractor. The power transmission includes a plurality of spaced, single groove unidirectional pulleys driven by a single continuous belt having but one arc of contact with each pulley. In certain forms of the invention, the driven pulleys and an adjacent adjustable idler pulley which is provided for maintaining the proper tension on the belt, are essentially coplanar and have their axes of rotation angularly offset relative to an upright drive pulley, coupled with the power takeoff shaft, and over which the belt is trained. One form of the invention provides for the elimination of the coplanar idler pulley adjacent the driven pulleys and relies on the adjustability of one of a pair of upright mule guide pulleys for maintaining the belt taut.

3,774,465

SPROCKET WHEEL FOR SNOWMOBILE OR THE LIKE

Gill Brasseur, Kingsbury, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed Apr. 21, 1972, Ser. No. 246,166
Claims priority, application Canada, Mar. 1, 1972, 135,998
Int. Cl. F16h 55/16
U.S. Cl. 74—243 R 7 Claims



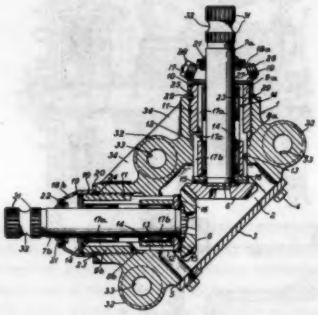
A sprocket wheel consisting of a circular body formed of an elastomeric material, such as rubber, and having a series of teeth formed in circumferentially equally spaced arrangement about the outer periphery thereof. The improvement consists in bonding to the outer periphery of the body at least one layer of reinforcing fabric material, such as nylon webbing. This construction ensures longer wear-life to the sprocket wheel.

3,774,466

ANGLE DRIVE

Vijay H. Bhatia, West Lafayette, and Harold K. Clendenen, Lafayette, both of Ind., assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 28, 1972, Ser. No. 284,211
Int. Cl. F16h 1/14, 1/20
U.S. Cl. 74—417 19 Claims



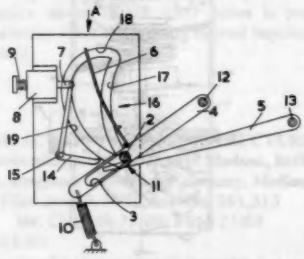
An angle drive in which two angularly related stub shafts are interconnected by a pair of meshed gears, each of which is carried by a respective shaft, said gears being disposed in a housing with the free ends of the respective shafts extending therefrom, the housing having an opening therein through which both shafts and associated gears may be inserted, sleeves being provided for supporting the respective shafts which are threaded in respective bores in the housing for adjustment of such shafts and the gears thereon, whereby the respective gears may be larger than such bores and, if desired, integrally formed with such shafts, means being provided for locking the sleeve members in adjusted positions and for assuring lubrication of the drive.

3,774,467

CONTROL DEVICE FOR USE WITH A FUEL INJECTION PUMP

Gordon Harris Leonard, Chalfont St. Peter, England, assignor to G. A. V. Limited, Birmingham, England

Filed Dec. 3, 1971, Ser. No. 204,609
Claims priority, application Great Britain, Dec. 11, 1970, 58,919/70
Int. Cl. G05g 1/00
U.S. Cl. 74—469 8 Claims



A control device for use with a fuel injection pump having a throttle control and a stop control includes a lever connected to the stop control, resilient means biasing the lever to a posi-

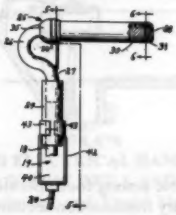
tion in which the supply of fuel to the engine is prevented. Also provided is a second lever connected to the throttle control of the pump and which can engage a pin carried by the lever. The pin is movable by means of the lever into contact with a stop and in this position fuel can be supplied to the engine. When the stop is released the pin is released and the lever returns to a position in which no fuel will be supplied to the engine.

3,774,468

ROTARY HANDGRIP ASSEMBLY FOR OPERATING BOTH THE TRANSMISSION GEAR LEVER OF A MOTOR TRUCK AND A PUSH-PULL SPEED-RATIO CONTROL SWITCH ON THAT LEVER

James H. Kimsey, Double Springs, Ala.

Filed Nov. 10, 1972, Ser. No. 305,452
Int. Cl. G05g *13/00*
U.S. Cl. 74—473 R 3 Claims



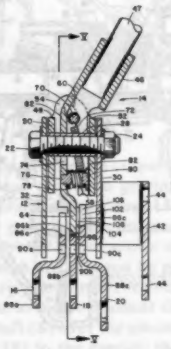
A vertical transmission shift lever of a heavy duty high speed motor truck is provided with a transversely extending rotary handgrip which can be moved orbitally to shift the lever as required, and which can be moved rotationally to push or pull the speed-ratio switch as required. When moved orbitally, the transmission gears are shifted. When moved rotationally, the rear-axle gear-ratio is changed from high to low or vice versa. These movements can be made either contemporaneously or independently.

3,774,469

GEAR SHIFT MECHANISM

Max R. C. Bruhn, Jr., Spring Lake, Mich., assignor to Grand Haven Stamped Products Company, Grand Haven, Mich.

Filed Apr. 24, 1972, Ser. No. 247,154
Int. Cl. G05g *9/12*
U.S. Cl. 74—476 16 Claims



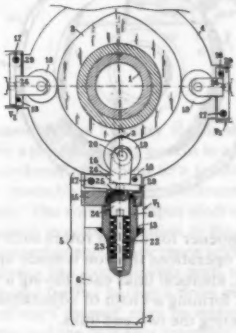
A gear shifting mechanism having a plurality of gear actuating members mounted in a housing for sliding movement in response to shifting movement of a selector. The selector has engaging means movably mounted in the housing by said selector for movement to different positions for engagement with different ones of said slidably mounted actuating members to effect movement thereof. The gear shifting mechanism also has a novel lift gate system for moving the engaging means of the lever out of its stop abutting position where it actuates the forward gears and into reverse gear position.

3,774,470

DETENT POSITIONING DEVICE

Jean Claude Cottin, Paris, France, assignor to Produmatic, Chateauneuf en Thymerais, France

Filed Nov. 19, 1971, Ser. No. 200,311
Claims priority, application France, Nov. 20, 1970, 7041781
Int. Cl. G05g *5/06*
U.S. Cl. 74—527 3 Claims



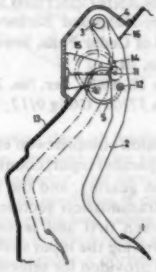
This detent positioning device for orienting and locking a rotary member rigid with a cam in one or more angular positions comprises a roller follower engaging the contour of said cam and adapted to engage a notch under the control of a hydraulic actuator incorporating spring means in its piston rod and, between said rod and the roller, a strap rigid with the rod and a rocker pivoted to said strap and supporting the roller. The arrangement is such that in case of alignment of the three points consisting of the axis of rotation of said rotary member, of the cam dead center and of the axis of rotation of said roller, this alignment is broken automatically by the device.

3,774,471

CONTROL PEDAL FOR MOTOR VEHICLES

Salvatore Pezza, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Apr. 3, 1972, Ser. No. 240,750
Claims priority, application Italy, Apr. 2, 1971, 21380 B/71
Int. Cl. G05g *1/14*
U.S. Cl. 74—560 3 Claims



A resilient unit for biasing the control pedals (such as the friction clutch pedal and/or the brake pedal) of a motor vehi-

cle in which the pedal biasing unit proper is a substantially complete convolution of steel wire, lying on a plane perpendicular to the axis of the pedal pivotal axis. The configuration of the resilient unit is such as to assist the driver both when depressing the pedal and when releasing the pedal, so that the physical effort required of the driver is in any case reduced.

3,774,472

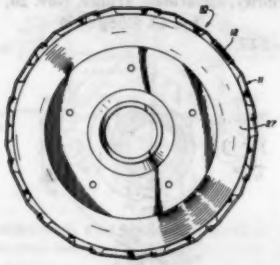
VIBRATION DAMPENER

Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Oct. 2, 1972, Ser. No. 294,414

Int. Cl. F16f *15/12*

U.S. Cl. 74—574 **6 Claims**



A vibration dampener for use on rotors such as brake discs during machining operations thereon is made up of a plurality of interconnected, identical links each having a workpiece engaging lead block forming a chain of adjustable length, and a spring interconnecting the two end links.

3,774,473

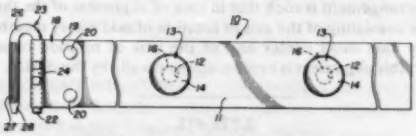
VIBRATION DAMPENER

Wallace F. Mitchell, Arlington Heights, Ill.

Filed Oct. 2, 1972, Ser. No. 294,415

Int. Cl. F16f *15/12*

U.S. Cl. 74—574 **10 Claims**



A vibration dampener for use on rotors such as brake discs during machining operations is an elastomeric band having a plurality of lead buttons mounted thereon and a fastener at one end for holding the band on the rim of the rotor with the lead buttons in engagement with the rotor.

3,774,474

TRANSMISSION AND CONTROLS THEREFOR

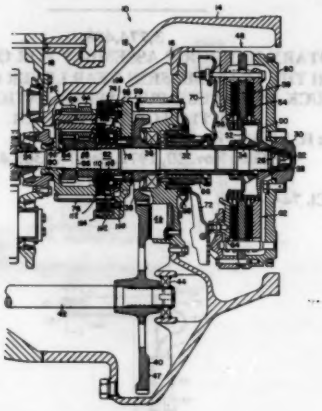
Robert James Recker; Raymond Richard Meysenburg, and Donald Wetrich, all of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed June 16, 1972, Ser. No. 263,589

Int. Cl. F16h *37/00*; **G05g** *9/12*; **F16h** *5/06*

U.S. Cl. 74—740 **8 Claims**

A 16-speed transmission comprises an eight-speed transmission section including parallel input, counter and output shafts carrying constant mesh gearing, and the input shaft having a two-speed planetary transmission section connected thereto and controllable between first and second operative conditions for respectively driving the input shaft at a high and a low speed. A first clutch is provided for selectively causing driving engagement between two sets of gearing for respectively driving the countershaft from the input shaft at a high and a low speed, for every speed of the input shaft; and second and third clutches are provided for selectively causing driving engagement between four sets of gearing for respectively driving the output shaft from the countershaft at four different speeds, for every speed of the countershaft. A range shift lever is selectively shiftable among four operative positions for controlling the engagement and disengagement of the second and third clutches to selectively establish low, intermediate, high and transport ranges of speeds in the transmission; and a speed



shift lever is shiftable among four operative positions for controlling the planetary transmission sections and the first clutch whereby any one of four speeds may be selected in each range of speeds selected by the range shift lever. Indicia is provided along with the shift patterns of the levers to indicate to the operator the position to which the levers must be shifted to obtain the next higher or lower speed from the one at which the transmission is operating.

3,774,475

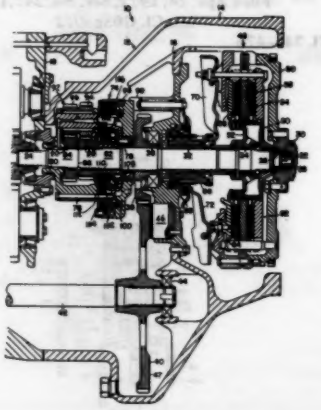
TRANSMISSION AND CONTROLS THEREFOR

Raymond Richard Meysenburg; Robert James Recker; Peter Donald Wetrich, all of Cedar Falls, Iowa; Charles Whippel Pelly, Scarsdale, N.Y.; William Frederick Hertzog Purcell, New York, N.Y., and James Mervyn Conner, Mamaroneck, N.Y., assignors to Deere & Company, Moline, Ill.

Filed June 16, 1972, Ser. No. 263,590

Int. Cl. F16h *37/00*; **G05g** *5/10*; **F16h** *5/06*

U.S. Cl. 74—740 **5 Claims**



A 16-speed transmission comprises an eight-speed transmission section including parallel input, counter and output shafts carrying constant mesh gearing, and the input shaft having a

two-speed planetary transmission section connected thereto and controllable between first and second operative conditions for respectively driving the input shaft at a high and low speed. A first clutch is provided for selectively causing driving engagement between two sets of gearing for respectively driving the countershaft from the input shaft at a high and a low speed, for every speed of the input shaft; and second and third clutches are provided for selectively causing driving engagement between four sets of gearing for respectively driving the output shaft from the countershaft at four different speeds, for every speed of the countershaft. A range shift lever is selectively shiftable among four operative positions for controlling the engagement and disengagement of the secnd and second clutches to selectively establish low, intermediate, high and transport ranges of speed in the transmission; and a speed shift lever is shiftable among four operative positions for controlling the planetary transmission sections and the first clutch whereby any one of four speeds may be selected in each range of speeds selected by the range shift lever. Indicia is provided along with the shift patterns of the levers to indicate to the operator the position to which the levers must be shifted to obtain the next higher or lower speed from the one at which the transmission is operating.

3,774,476

MULTIPLE SPEED ELECTRICAL HAND POWER TOOL SUCH AS ELECTRIC DRILL AND THE LIKE

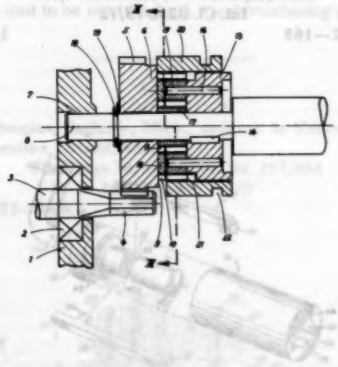
Dieter Sohnlein, Kaufering, and Ewald Merz, Utting, both of Germany, assignors to Metabowerke KG., Closs, Rauch & Schnitzler, Nurtingen, Germany

Filed Sept. 5, 1972, Ser. No. 286,574

Claims priority, application Germany, Sept. 9, 1971, P 21 45 009.9

Int. Cl. F16h *3/48*

U.S. Cl. 74—785 **9 Claims**



A motor provides power over an output shaft (8) to which is geared a multiple speed reduction gearing, which includes a planetary drive including planet gears (15) and a planet gear carrier (13). A main gear (6) with outer and inner gear teeth (10, 11) thereon is driven by the motor shaft (4) gear teeth (10, 11) thereon, which are engaged by planetary gears (15) located on a planetary gear carrier. An outer axially shiftable ring (20) is shiftable to either connect the outer gear teeth (10) to the output shaft (8) over the planetary gear carrier, or the planetary gear (15) to the carrier, the latter drive being either fixed, or through a slip engagement to provide for two speed, or continuously variable speed output from the drive motor.

3,774,477

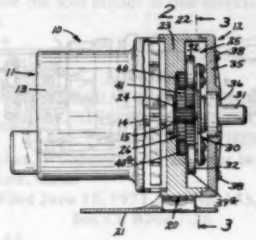
GEAR MOTOR

David M. Murphy, 602–2nd Street, N.W., Mason City, Iowa

Filed Dec. 30, 1971, Ser. No. 214,068

Int. Cl. F16b *1/36, 57/08*; F16d *41/12*

U.S. Cl. 74—801 **5 Claims**



A motor assembly has a rotary motor shaft which is connected to drive a planetary gear system in a first gear assembly and impart rotational movement to a rotating output shaft of the first gear assembly at a ratio different from that of the motor assembly. The rotating output shaft of the first gear assembly is mounted in coaxial relation to the rotary motor shaft of the motor assembly and one or more additional gear assemblies, each having like components with respect to the first gear assembly and further having a drive gear on the rotating output shaft of each thereof, may be interposed between the motor assembly and the first gear assembly to further vary the speed of rotation between the rotary motor shaft of the motor assembly and the rotary output shaft of the first gear assembly.

3,774,478

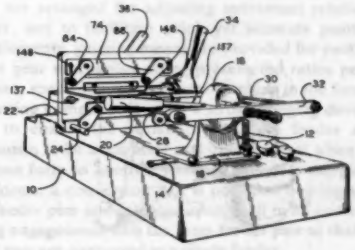
ELECTRICAL INSULATION CUTTER AND STRIPPER

Louis M. Carpenter, and Kenneth L. Dunn, both of Fayetteville, N.Y., assignors to Carpenter Manufacturing Co., Inc., Manlius, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,253

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.51 **15 Claims**



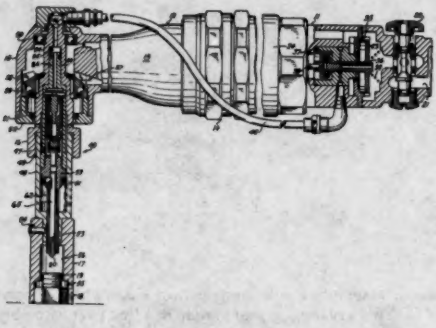
Apparatus for cutting through insulation around an electrical conductor from opposite sides simultaneously to within very close to the conductor, and then stripping the insulation off the conductor. The apparatus is especially suited to sever the insulation on flat, multi-lead cables formed of a plurality of individual conductors in side-by-side relationship surrounded by insulation and to remove a portion of the insulation from the conductors. Special mounting and adjusting means insure that the edges of the two opposing blades will remain precisely parallel as they cut the insulation to the exact depth for which they have been set.

3,774,479

PNEUMATIC MARKING DEVICE

Richard S. Lesner, Pontiac, Mich., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Division of Ser. No. 44,417, June 8, 1970, Pat. No. 3,661,040.
This application Dec. 14, 1971, Ser. No. 207,824
Int. Cl. B25b
U.S. Cl. 81—52.5 3 Claims



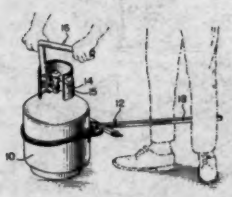
A tool pneumatically operable under the control of an operator to prick a piece of work, such as a bolt head or stud, in rapid succession with a group of marks to indicate a torqued condition of the work. The tool has a socket to be placed over the work; and has an operator controlled throttle for applying operating air to mechanism for marking the work.

3,774,480

APPARATUS FOR ROTATING VALVES ON GAS CYLINDERS

Eugene D. Taylor, and Willis R. Swisher, both of Harlingen, Tex., assignor to said Taylor by said Swisher

Division of Ser. No. 834,940, June 18, 1969, Pat. No. 3,635,104. This application Oct. 29, 1971, Ser. No. 193,733
Int. Cl. B25b *13/00, 21/00*
U.S. Cl. 81—53 R 3 Claims



A cylinder wrench for inserting and removing cylinder valves from pressurized cylinders, and a vise assembly for firmly gripping cumbersome objects such as pressurized cylinders and large diameter pipes. The long-handled vise assembly includes a chain which is wrapped about the pipe for cylinder and then tightened to provide a firm grip. The wrench assembly mates with the cylinder valve and includes a gripping bar that permits high torque to be applied to the valve. Counteracting torque can be applied to the cylinder by gripping it with the vise assembly and bracing the vise assembly handle.

3,774,481

PIPE TIGHT ALL

Earl H. Goodman, Rt. 3, Marshville, N.C.

Filed Jan. 21, 1971, Ser. No. 108,337
Int. Cl. B25b *17/00, 21/00*
U.S. Cl. 81—57.13 3 Claims

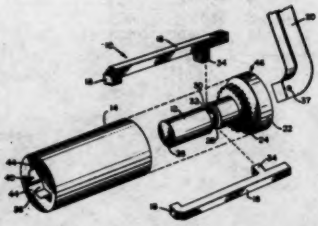
A wrench for grasping pipes and tightening the same, the wrench including a hollow handle with an electric motor therein that is powered externally by means of an extension cord and plug leading from the handle, the motor driving rotationally a pair of toothed rollers between which there is a saddle into which a pipe is fitted for being rotated by the toothed rollers, the pipe being held tightly against the two toothed rollers by means of a swivel linked belt that carries freely rotatable rollers bearing against the surface of the pipe.

3,774,482

ADJUSTABLE SOCKET WRENCH

Richard A. Morin, 76 White Street, Hartford, Conn.

Filed July 21, 1972, Ser. No. 274,093
Int. Cl. B25b *13/12*
U.S. Cl. 81—165 12 Claims

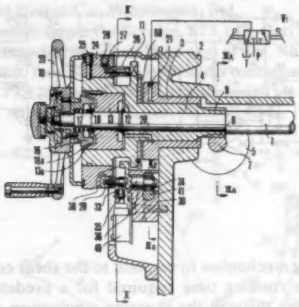


An adjustable socket wrench having a tubular case containing an axially elongated wrench body and a plurality of circumaxially spaced jaw elements including jaws exposed at the forward end of the case. The case is axially movable relative to the body and the jaws between locking and adjusting positions. When the case is in its adjusting position the body may be rotated relative to the case and the jaw elements to adjust the opening between the jaws. When the case is in its locked position the body and jaws are restrained against movement relative to the case.

3,774,483
TWO-STEP AUTOMATIC FEED SYSTEM FOR A MACHINE TOOL

Teruyuki Ito, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed June 19, 1972, Ser. No. 264,064
Claims priority, application Japan, June 26, 1971, 46/46575
Int. Cl. B23b *3/36*
U.S. Cl. 82—34 B 12 Claims

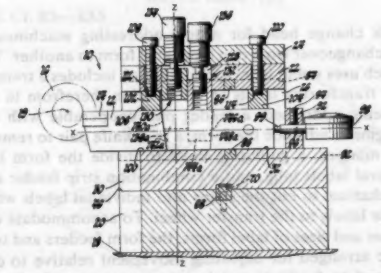


An automatic feed system for a machine tool is provided to change the feed conditions of a tool between rough machining and finishing steps. A sleeve is rotatably mounted on a bed and is connected with a driving shaft which operates to advance or retract a tool slide. A feed cylinder unit drives the sleeve rotationally in either direction. The sleeve carries three dogs located on the periphery for cooperation with respective stops which define, by abutment with the dogs, the ends of advancement and retraction of the tool slide in the rough machining and the finishing steps, respectively. A stop indexing cylinder unit is provided to selectively index those two stops which define the end of advancement in the rough machining step and the end of retraction in the finishing step into the path of movement of the associated dog. This permits a single machine tool to be used for both rough machining and finishing steps.

3,774,484
TOOL BLOCK

Henry Douglas, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 30, 1972, Ser. No. 257,884
Int. Cl. B23b *29/10*
U.S. Cl. 82—36 R 3 Claims

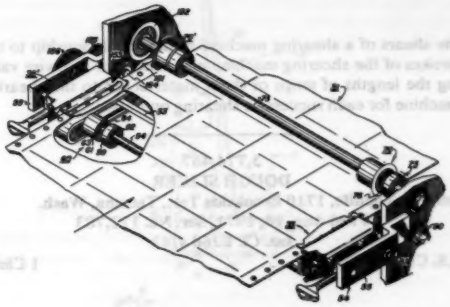


A tool block comprises plates providing therebetween a tool holder guide channel for preventing movement of a tool holder along two of three orthogonal axes while permitting slidable adjustment relative to a workpiece along the third or adjustment axis. A pair of preload blocks normally clamp the tool holder against movement along the adjustment axis. A pair of forked shaped wedges straddle the tool holder and are adjustably received in recesses cut in opposite sides of the tool holder. Each wedge has a set of ramp shaped cam surfaces inclined along the adjustment axis for cooperating with a set of mating ramp shaped cam follower surfaces on the tool holder recesses to overcome the clamping preload of the preload block and slide the tool holder in one direction along the adjustment axis.

3,774,485
METHOD AND APPARATUS FOR QUICK CHANGING ARTICLE ADDRESSING MACHINES FROM ONE SIZE LABEL FORM TO ANOTHER

Dean S. Kercher, Woodstock, Ill., assignor to Xerox Corporation, Stanford, Conn.

Filed June 15, 1971, Ser. No. 153,324
Int. Cl. B26d *7/26*
U.S. Cl. 83—13 4 Claims



A quick change head for article addressing machines to facilitate changeover from one type label form to another. The head, which uses uncut label form material, includes a transfer wheel for transferring labels or information therefrom to the articles being addressed, a feeder pair cooperable with the form margins to advance the form, a trim knife pair to remove the form margins, a guillotine knife to divide the form into strips several labels long, and a combination strip feeder and knife mechanism to cut the strips into individual labels while feeding the labels to the transfer wheel. To accommodate different types and sizes of label forms, the form feeders and trim knifes are arranged for adjusting movement relative to one another, and to facilitate quick yet accurate positioning of these elements, gauging means are provided for each. A quick change gear mechanism using preselected ratios permits the necessary speed change to be readily made in the form feeding and cutting components while a stroke gauging device is provided to enable the stroke of the strip feeder and knife mechanism to be accurately and quickly reset when changing from one form to another. To accommodate marginless type label forms, a conversion belt is provided bearing single row form feeder pins and foldable upon itself in an endless loop in driving engagement with the form feeder pair so that the form feeder pair are converted to a single feeder.

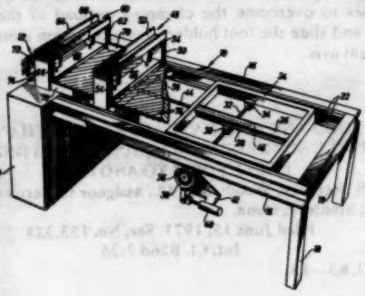
3,774,486
FEEDING AND CUTTING DEVICE

Bo Johnsson, Kungsbacka, Sweden, assignor to Svenska Rotor Maskiner Aktienbolag, Nacka, Sweden

Filed May 2, 1972, Ser. No. 249,670
Claims priority, application Great Britain, May 3, 1971, 12,744/71
Int. Cl. B26d *5/20*
U.S. Cl. 83—277 8 Claims

A machine for cutting superposed layers of sheet material to successively form element plates of substantially continuously

varying width for heat exchangers and for collecting said plates in stacked relationship, said machine including reciprocatable means for intermittently feeding desired lengths of superposed strips of sheet material to and beyond



the shears of a shearing machine in timed relationship to the strokes of the shearing machine and means for stepwise varying the lengths of strips of sheet material fed to the shearing machine for each successive shearing operation.

3,774,487

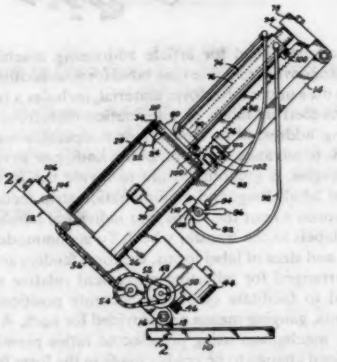
DOUGH SLICER

Doris H. Topliffe, 1710 Brookside Ter., Tacoma, Wash.

Filed Aug. 18, 1971, Ser. No. 172,783

Int. Cl. B26d *4/42*

U.S. Cl. 83—278 **1 Claim**



A slicer for slicing dough into pizza rounds comprises an elongated holder open at both ends for holding a quantity of dough. A motor driven ram is positioned at the rearward end of the holder for ejecting the dough stepwise from the forward end thereof. A motor driven knife is positioned at the forward end of the holder for slicing the dough as it is ejected. Timing means connected to the ram and knife motors actuate them in alternating relation to each other.

3,774,488

SENSING SYSTEM FOR CUT-TO-LENGTH SHEAR

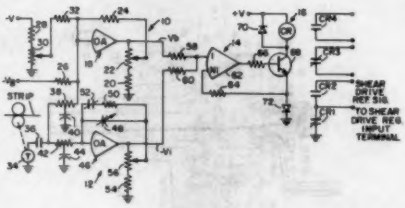
Mohammed Safiuddin, North Tonawanda, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 21, 1971, Ser. No. 210,466

Int. Cl. B23d *25/16*

U.S. Cl. 83—293 **3 Claims**

A sensing system for cut-to-length shear, for providing a shear control signal for a process line of material moving at a line speed which is a function of a voltage V_L, the shear control signal being used for causing actuation of the shearing mechanism. A signal V_p is derived which is a function of the predetermined cut length. A signal V_i is derived which is a function of the instantaneous length of material passing the shearing mechanism. An additional voltage ΔV is derived is a function of $(V_L\, t_{inertia}/t)$ where $t_{inertia}$ is the time required for



the shearing mechanism to respond to the shear control signal, and t is the running time required for a predetermined cut length to pass through the shearing mechanism at maximum line speed. The signals V_p, Vi and Δv are received by electronic circuitry, and a shear control signal is delivered to the shearing mechanism when the algebraic relationship is satisfied $V_p = Vi + \Delta V$.

3,774,489

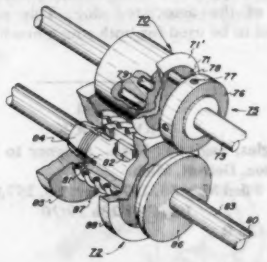
QUICK CHANGE LABELING HEAD

Dean S. Kercher, Woodstock, and Trygve R. Rod, Mundelein, both of Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed June 15, 1971, Ser. No. 153,313

Int. Cl. B23d *19/02*; B26d *7/26*

U.S. Cl. 83—423 **10 Claims**



A quick change head for article addressing machines to facilitate changeover from one type label form to another. The head, which uses uncut label form material, includes a transfer wheel for transferring labels or information therefrom to the articles being addressed, a feeder pair cooperable with the form margins to advance the form, a trim knife pair to remove the form margins, a guillotine knife to divide the form into strips several labels long, and a combination strip feeder and knife mechanism to cut the strips into individual labels while feeding the labels to the transfer wheel. To accommodate different types and sizes of label forms, the form feeders and trim knives are arranged for adjusting movement relative to one another, and to facilitate quick yet accurate positioning of these elements, gauging means are provided for each. A quick change gear mechanism using preselected ratios permits the necessary speed change to be readily made in the form feeding and cutting components while a stroke gauging device is provided to enable the stroke of the strip feeder and knife

mechanism to be accurately and quickly reset when changing from one form to another. To accommodate marginless type label forms, a conversion belt is provided bearing single row form feeder pins and foldable upon itself in an endless loop in driving engagement with the form feeder pair so that the form feeder pair are converted to a single feeder.

3,774,490

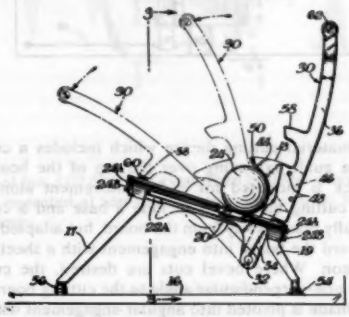
SLICING DEVICE

Samuel L. Gerson, Wilmington, Del., assignor to Restaurant Equipment Design Co., Wilmington, Del.

Continuation-in-part of Ser. No. 673,147, Oct. 5, 1967, abandoned, and a continuation-in-part of Ser. No. 778,004, Nov. 18, 1968, Pat. No. 3,605,839, and a continuation-in-part of Ser. No. 77,128, Oct. 1, 1970, abandoned. This application Apr. 13, 1972, Ser. No. 243,634

Int. Cl. B26d 3/26

U.S. Cl. 83—425.3 18 Claims



An array of spaced parallel bars is mounted on a pivoted arm to mesh between a rack of cutting blades. The pivot is on one side of the blades and the bars are on the opposite side. The arm is carried around the outside of the blades either in a single rod or on a spaced pair of rods. The bars in the array are a stack of plates slightly greater in height than the object to be sliced with their free ends overhanging the object. These free ends are arcuate or straight. The arm includes a pair of rods connected by the pivot or a single rod connected to the pivot, a stack of spaced plates and an operating handle remote from the pivot. Stop projections extend from the arm between the plates and the handle. The cutting blades are a planar rack or a pair of staggered planar racks one behind the other.

3,774,491

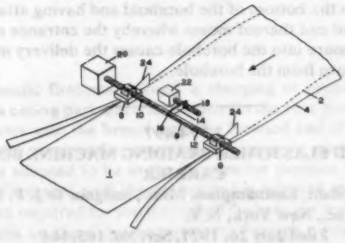
UNIVERSAL TRIMMING FACILITY

Daniel Edward Killilea, Millersville, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed June 28, 1971, Ser. No. 157,200

Int. Cl. B26d 7/26

U.S. Cl. 83—433 3 Claims



Two cutter assemblies are mounted on a screw drive shaft with right and left-hand threads. Rotation of the shaft will cause adjustment of the distance between the two cutter heads. The shaft assembly and cutter heads themselves are adjustable along the axis of the shaft. The assembly is capable of trimming a carpet to varied widths and of a shifting center line.

ERRATUM

For Class 83—522 see:
Patent No. 3,774,495

3,774,492

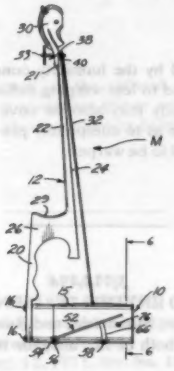
MUSICAL INSTRUMENT

Richard H. Forbes, 2895 Laramie Rd., Riverside, Calif.

Filed Feb. 26, 1973, Ser. No. 335,789

Int. Cl. G10d 1/00

U.S. Cl. 84—170 10 Claims



A musical instrument formed from an empty five-gallon gasoline can and an upstanding neck with a steeply sloping fingerboard. The gasoline can is of the conventional flat-sided type, with a pouring opening and handle on top, used to carry gasoline on Jeeps and other vehicles, and rests on one of a pair of parallel sides to form the base of the instrument. The upstanding neck has a lower leg which is secured to the can to extend vertically upwardly adjacent its handle and beyond its upwardly facing side. The fingerboard is disposed above the gasoline can and extends for about three feet from a lower end spaced above the can to an upper end offset from the lower end toward the edge of the can. The instrument has a single string which is knotted at its lower end and passes upwardly through an opening in the upwardly facing side of the can to a twisting peg mounted in the upstanding neck just above the fingerboard. The string is positioned so that it can be depressed to the fingerboard by hand for instrument playing purposes. The leg and fingerboard parts of the upstanding neck are joined by a web having a saddle-shaped upper side on which one can lean, place a foot, or sit, while playing the instrument. Associated with the gasoline can is a foot pedal which actuates a striker bar pivotally mounted inside the can to produce a percussive effect.

3,774,493

KEY FRAME CONSTRUCTION FOR PIANOS AND LIKE MUSICAL INSTRUMENTS

Koichi Yamada, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed July 12, 1971, Ser. No. 161,774

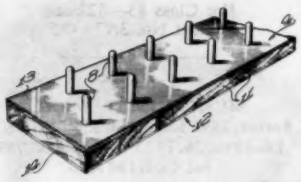
Claims priority, application Japan, Aug. 28, 1970, 45/852224

Int. Cl. G10c 3/12

U.S. Cl. 84—423 4 Claims

A front rail constituting a key frame for supporting the keys of a piano comprises a plurality of rectangular wooden blocks

connected end to end to form an elongated rail body, and a surface covering member of synthetic resin material securely attached to at least the entire upper surface of the rail body. The surface covering member serves to protect the rail body



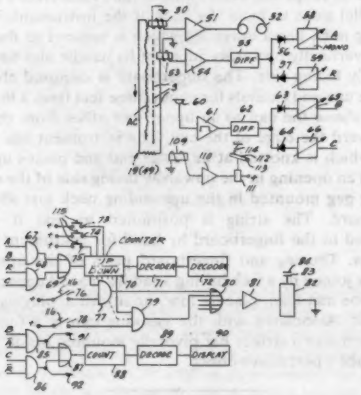
from being affected by the humidity conditions, so that the front rail is subjected to less warping deformation. Other surfaces of the rail body may also be covered by the surface covering member so as to completely prevent moisture from causing the front rail to be warped.

3,774,494

AUTOMATED RHYTHM TEACHING MACHINE

John Edgar Reid, Sr., Mundelein, and Russell N. Muehleman, Mount Prospect, both of Ill., assignor to said Reid by said Muehleman

Filed June 19, 1972, Ser. No. 263,791
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 **20 Claims**



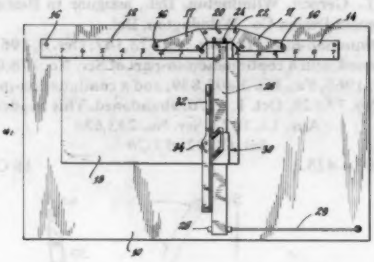
An automated rhythm teaching machine in the general form of a magnetic tape player employs digital circuits for monitoring a students attack and release against an attack and release standard carried on the magnetic tape and grades the performance of the student. In one embodiment the machine is adapted to hold the students exercise book which has printed rhythm exercise corresponding to the rhythm exercise magnetically recorded on the tape. In another embodiment, the rhythm exercise is both visually and magnetically recorded on the tape and projected in enlarged form upon a screen for the students use in performing the exercise.

3,774,495

SHEET MATERIAL CUTTING DEVICE AND CUTTING BLOCK THEREFOR

Morton Pomeroy Matthew, Kreiner Ln., Norwalk, Conn.

Filed Jan. 28, 1972, Ser. No. 221,749
Int. Cl. B26d *7/28*
U.S. Cl. 83—522 **19 Claims**



A sheet material cutting device which includes a cutting board and a guide extending over the top of the board. A cutting block is mounted for sliding movement along the guide. The cutting block may include a base and a cutting blade normally biased away from the board, but adapted to be pivoted toward the board into engagement with a sheet positioned thereon. Where bevel cuts are desired, the cutting blade is at a non-perpendicular angle to the cutting board and the cutting blade is pivoted into angular engagement with the sheet. A scale is mounted for movement with the cutting block. The scale has a reference marking at the point where the cutting blade engages a sheet and extends from the reference point in at least one direction. The scale may be utilized to easily and accurately determine points at which the beginning and end of a cut occur.

3,774,496

BOREHOLE CHARGING APPARATUS

Robert Joseph Roach, Otterburn Heights, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

Filed Nov. 22, 1972, Ser. No. 308,744
Claims priority, application Canada, Jan. 18, 1972, 132,724
Int. Cl. C06d *1/08*
U.S. Cl. 86—20 C **7 Claims**

A manually portable apparatus for the charging of small diameter boreholes with slurry explosive includes a slurry explosive storage compartment, a pneumatically operated reciprocal pump detachably connected to an outlet in the slurry storage compartment, delivery means attached to the pump for conveying slurry under pressure from the storage compartment into a borehold and control means for regulating the operating rate of the pump, the slurry delivery means being insertable to the bottom of the borehold and having attached to the forward end thereof means whereby the entrance of slurry under pressure into the borehole causes the delivery means to be withdrawn from the borehole.

3,774,497

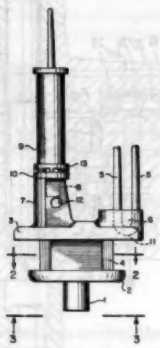
MOLDED ELASTOMER BRAIDING MACHINE BOBBIN CARRIER

Joseph E. Stahl, Easthampton, Mass., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Filed July 26, 1971, Ser. No. 165,444
Int. Cl. D04c *3/14*
U.S. Cl. 87—55 **4 Claims**

The base of braiding machine bobbin carriers is molded of an elastomer, polyurethane. Weight of the carrier is greatly

reduced, wear of the guiding element in the customary multiple track braiding machine is decreased, and the most important effect is that noise is greatly reduced, for example by a



factor of ten, (10 db), and even when braiders using the carrier are operated at top speed noise levels can be kept within legal limits.

3,774,498

CHARGING DEVICE FOR AUTOMATIC FIREARMS

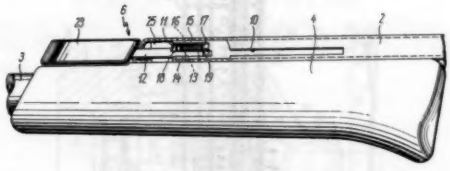
Tilo Moller, Oberndorf, and Dieter Ketterer, Oberndorf/Neckar, both of Germany, assignors to Heckler & Koch GmbH, Oberndorf/Neckar, Germany

Filed May 12, 1971, Ser. No. 142,610

Claims priority, application Germany, May 14, 1970, P 20 23 523.8

Int. Cl. F41d *11/00*

U.S. Cl. 89—1 K **8 Claims**



Automatic firearms embody a charging or cocking device having a casing part and a slider therein the rear part of which cooperates with the breech and the forward end of which incorporates a pivotally mounted charging or cocking lever which is adapted to lie in the inoperative position in front of and in alignment with the casing and is adapted to be swung out when required for use through 90° where the lever engages a stop pin on the slider and projects through a lateral slot in the casing so that the slider can be moved to the rear and then when it moves forwardly again a spring acting on the lever swings it back to the original in-line position in line with the casing.

3,774,499

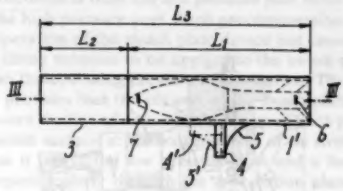
REPEATING WEAPON

Michel Precoul, Paris, France, assignor to Societe D'Etudes De Realisation Et D'Applications Techniques, Paris, France

Filed Oct. 29, 1971, Ser. No. 193,939

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.816 **2 Claims**



This repeating weapon, of the antitank small arm type, is characterized in that it comprises one or more projectiles each in a field container, these containers being disposed side by side.

3,774,500

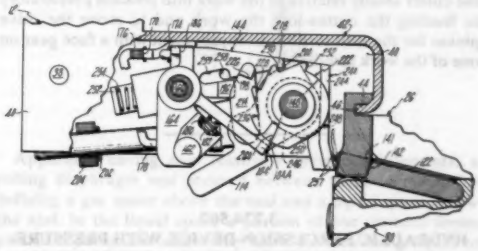
MACHINE PISTOL

Henry A. Into, Farmington, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed Oct. 12, 1971, Ser. No. 188,081

Int. Cl. F41d *11/02, 11/08*

U.S. Cl. 89—129 A **20 Claims**



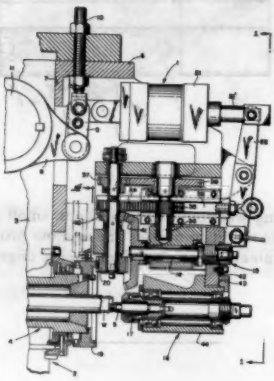
Automatic weapon having a unitary fire control group including a burst control counter rotatable in one angular direction from a starting position in synchronism with hammer release and which is automatically self resetting in the opposite angular direction upon trigger release, the fire control group being releasably connected to a frame and barrel group for snap locking assembly with a receiver, the frame and barrel group being releasably secured to the receiver by a takedown latch rotatably supported on a muzzle end of the receiver, and a gas operated piston supported for reciprocation on the barrel and having a forwardly projecting skirt circumferentially surrounding a muzzle compensator and jointly defining therewith a gas chamber when the piston is in a forward operative limit position and providing forwardly directed gas blowout.

3,774,501

THREAD MILLING ATTACHMENT

Roger W. Brown, and Hinkley H. Ranney, both of Windsor, Vt., assignors to Cone-Blanchard Machine Company, Windsor, Vt.

Filed Dec. 22, 1971, Ser. No. 211,004
Int. Cl. B23g 1/32, 3/00
U.S. Cl. 90—11.64 15 Claims



A thread milling attachment adapted to be mounted in place of a conventional cross slide on a machine tool to make use of the standard mechanism for feeding the thread cutter radially to the desired depth and rotating the cutter in normal manner by conventional attachment gearing. The tool slide for the cutter spindle is separately mounted from the lead screw thus allowing the cutter spindle to travel at an angle relative to the axis of the work spindles while the lead screw remains substantially parallel to the work spindle axes. Axial movement of the thread milling attachment may also be obtained to move the cutter axially relative to the work into position preparatory to feeding the cutter into the work and to move the drive pinion for the lead screw into engagement with a face gear on one of the work spindles.

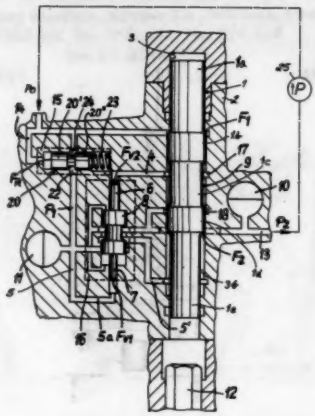
3,774,502

HYDRAULIC PERCUSSION DEVICE WITH PRESSURE-RESPONSIVE CONTROL OF IMPACT FREQUENCY

Friedrich-Karl Arndt, Essen, Germany, assignor to Fried. Krupp GmbH, Essen, Germany

Filed May 14, 1971, Ser. No. 143,400
Int. Cl. F01l 15/16, 25/06; F01b 7/18
U.S. Cl. 91—246 7 Claims

A hydraulic percussion device has a reciprocating ram with a smaller rearwardly facing land and a larger forwardly facing land, the former being continuously subjected to the supply pressure of a fluid source whereas the latter is alternately connectable to a low-pressure discharge line (for the forward stroke) and to a branch of a conduit carrying the supply pressure (for the return stroke) by a slide valve whose shifting is hydraulically controlled by the ram. A throttle valve in the branch conduit leading to the slide valve senses the supply pressure and, if that pressure falls below a predetermined level, partly blocks that branch so as to reduce the reverse pressure differential effective during the return stroke whereby the withdrawal of the ram from an impact-receiving tool is delayed so that the impact frequency decreases, thus



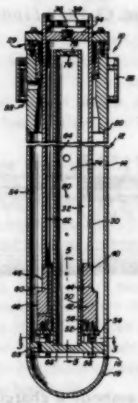
reducing the demand upon the source and providng more time for the buildup of the requisite working pressure.

3,774,503

SAFETY SLOW-DOWN DEVICE FOR HYDRAULIC ELEVATORS

Robert B. McCreery, 1231 Bellbrook Ave., P.O. Box 157, Xenia, Ohio

Filed Aug. 17, 1971, Ser. No. 172,388
Int. Cl. F15b 15/22; F01b 31/00
U.S. Cl. 91—407 17 Claims

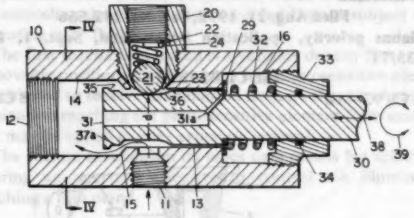


The outer casing of a hydraulic elevator is internally provided with a tubular column extending upwardly from the lower casing head into the tubular ram. Orifice ports in the tubular column equalize the pressures in the ram and the casing externally of the ram. These ports progressively restrict pressure equalizing flow as the ram descends under load to limit the descent rate of the ram.

3,774,504
SLIDING SPOOL VALVE

Roland W. Bonney, Western Ave., Kennebunkport, Maine

Filed Mar. 1, 1972, Ser. No. 230,894
Int. Cl. F15b *11/08, 13/04*; F16k *11/00*
U.S. Cl. 91—446 6 Claims

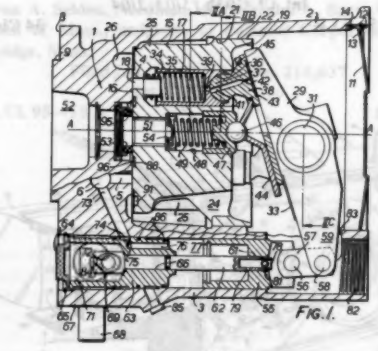


A valve, particularly useful to control the operation of a single-acting hydraulic cylinder comprises a valve body bored to receive a spool-shaped valve stem adapted to be freely rotatable therein and to be moved longitudinally to effect the operation of the valve. Power fluid is admitted to the valve chamber at the mid-portion of the stem, and power fluid take-off is made from the mid-portion through a ball check valve, which is opened either by the fluid pressure of the incoming fluid or by being engaged by one rim of the spool when the spool is slid forward, this latter position permitting fluid to flow from the take-off line. The spool, when slid in the other direction, seals the discharge line from the valve body, permitting the full pressure of the incoming fluid to be exerted on the check valve. The spool, in its mid-position, permits the valve to constantly discharge and the ball check valve to remain seated and to hold whatever fluid pressure exists in the take-off line.

3,774,505
SWASH PLATE DEVICES

Donald Patterson McLeod, Cheltenham, England, assignor to Dowty Technical Developments Limited, Cheltenham, England

Continuation-in-part of Ser. No. 33,716, May 1, 1970. This application Mar. 1, 1971, Ser. No. 119,605
Int. Cl. F01b *3/00*
U.S. Cl. 91—506 8 Claims

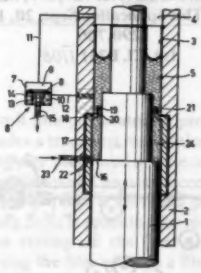


This invention concerns a swash plate device having a rotary cylinder block, cylinders in the block arranged parallel to or inclined to the block rotation axis, pistons reciprocable in the cylinders and projecting from one end of the cylinder block, a tiltable swash plate disposed adjacent the one end of the block and having a flat swash surface engaged by the pistons, and a valve surface having a high pressure port and a low pressure port connecting to and disconnecting from cylinder ports during block rotation, the arrangement being such that during cylinder block rotation each piston is urged partly into its cylinder to precompress liquid therein after the cylinder disconnects from the low pressure port before it connects to the high pressure port. Such precompression reduces noise in operation of the swash plate device but causes an alternating tilting moment to be applied to the swash plate depending on the operating pressure of the device. The present invention provides that the tilt axis of the swash plate should lie in between the line of action of the thrust of each piston on the flat swash surface at the extreme end of its stroke in its cylinder as it leaves the low pressure port and a line which passes perpendicularly through the articulation plane of the pistons at the point of intersection with the cylinder block axis.

3,774,506
DEVICE COMPRISING A LIQUID-SUPPORTED ROLLING DIAPHRAGM SEAL

Herman Henricus Maria Van Der Aa, Emmasingel, Eindhoven, Netherlands

Filed Mar. 29, 1972, Ser. No. 239,214
Claims priority, application Netherlands, Apr. 9, 1971, 7104837
Int. Cl. F15b *21/04*
U.S. Cl. 92—83 5 Claims



Apparatus having two relatively reciprocal elements, a rolling diaphragm seal secured between these elements for defining a gas space above the seal and a liquid space below the seal. In the liquid space a portion of one element forms part of a pump and a one-way valve for delivering liquid to said liquid space.

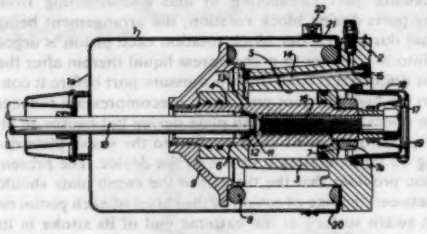
3,774,507
SPRING BRAKE UNITS

Wilbur Mills Page, Lincoln, and Charles Thomas Riley, North Hykeham, both of England, assignors to Clayton Dewandre Company Limited, Lincoln, England

Filed Mar. 18, 1971, Ser. No. 125,597
Claims priority, application Great Britain, Mar. 26, 1970, 14,752/70
Int. Cl. F16d *65/24*
U.S. Cl. 92—130 7 Claims

A spring-actuated fluid pressure-released brake unit for use in a hydraulic braking system comprises a mounting plate em-

bodying and supporting a hydraulic cylinder and piston assembly, an actuating spring and a spring relaxing device, the



arrangement being such that all reaction to braking force is taken by the mounting plate so permitting the use of a lightweight shell or casing.

3,774,508

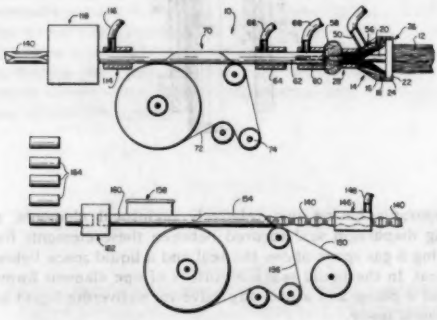
APPARATUS FOR MAKING FILTER MEANS

Richard M. Berger, Richmond, and Elwin W. Brooks, Mechanicsville, both of Va., assignors to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 155,705, June 23, 1970, Pat. No. 3,703,429, which is a division of Ser. No. 45,109, June 10, 1970, Pat. No. 3,637,447, which is a continuation-in-part of Ser. Nos. 727,477, May 8, 1968, Pat. No. 3,533,416, and Ser. No. 820,355, April 30, 1969, Pat. No. 3,599,646, which is a continuation-in-part of Ser. No. 727,477, May 8, 1968, Pat. No. 3,533,416. This application Sept. 20, 1972, Ser. No. 290,700

Int. Cl. B31f *1/08*

U.S. Cl. 93—1 C **3 Claims**



A method and apparatus for making filter means of a type which is constructed to provide elongated, high surface area, cavities defined on opposite sides of a relatively thin wall formed of filtering material with only the ends of the filter means contacting an overwrapped outertube thereby presenting maximum available surface area of the material from which the products are formed to the smoke for filtration is disclosed. A tow of a suitable filtering material is passed through an air nozzle containing a mandrel centered therein, the tow thereby achieving a uniformly random, but tubular, configuration and then through a steam curing station followed by an air curing station. The formed rod is then again steam cured and passes to a crimping device which imparts a particular configuration thereto. The crimped rod is then again air cured, wrapped, and cut. In another embodiment, an additional material may be added by means either of a printing applicator device or a pulsating nozzle device.

3,774,509

DEVICE FOR MAKING BAGS

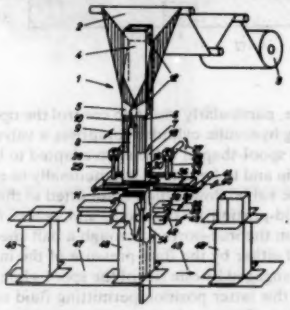
Hans Heinzer, Beringen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Aug. 21, 1972, Ser. No. 282,566

Claims priority, application Switzerland, Sept. 1, 1971, 12835/71

Int. Cl. B31b *33/02*

U.S. Cl. 93—18 **8 Claims**



A device for making bags is provided with an upright forming tube over which a tubular structure made of flexible sealable sheet material is moved downwardly step-by-step to be provided at its lower end, when projecting freely from the forming tube with a bottom by means of bottom seam dies during an interval the forming tube is moved upwardly while the tubular structure is clamped against movement. Subsequently, a double gripper seizes folded margins of the bottom and pulls the tubular structure downwardly and then the bag so formed is severed from the tubular structure.

3,774,510

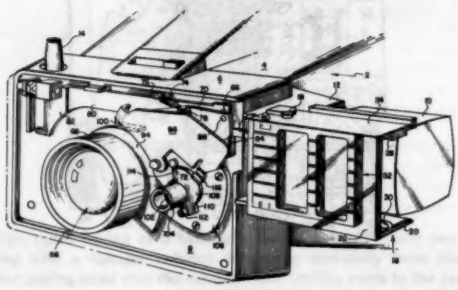
UNITARY TRIM CONTROL

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 21, 1971, Ser. No. 164,772

Int. Cl. G03b *15/03, 3/04*

U.S. Cl. 95—11 R **34 Claims**



The subject disclosure describes an exposure control system which is automatically adjusted in conformance with the

distance settings of a camera with which it is incorporated to provide so-called "follow-focus" operation. The exposure control system operates in both ambient and "flash" modes and is provided with a unitary manually-operable "trim" mechanism such that a camera operator need only insert one trim setting for either ambient or "flash" mode operation. The unitary "trim" mechanism cooperates with a first mechanism that is effective to control illumination received from a subject when operating in an ambient mode and simultaneously cooperates with a second mechanism which is solely effective in controlling the illumination received from a subject when operating in a "flash" mode.

The first mechanism includes a variable density filter which is movably positioned with respect to a photosensitive element (positioned to receive illumination from a subject) whereby illumination reaching the photosensitive element from said subject may be varied to alter exposure interval.

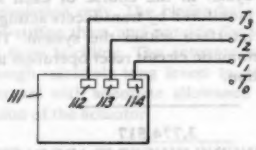
The second mechanism includes cam means for selectively altering an aperture effective to control the illumination reaching a film plane.

3,774,511

CONTACT-LESS INITIATION OF LIGHT EMISSION FROM PHOTO LAMPS SYNCHRONIZED WITH CAMERA OPERATION

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,800
Int. Cl. G03b *15/035*
U.S. Cl. 95—11.5 R **1 Claim**



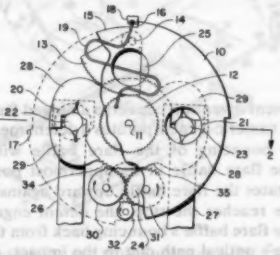
A magnetically sensitive semiconductor having a plurality of individual magnetically sensitive areas is used to trigger a photoflash lamp in synchronization with shutter operation. A magnetic field is impressed on the individual magnetic areas in time sequense. One is selectively connected to trigger the lamp to provide a selectible time delay for flash operation.

3,774,512

TWIN LENS CAMERA OPTICAL SYSTEM ADJUSTMENT MODULE

Myron A. Seiden, Needham, and Charles A. Barr, Waltham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1972, Ser. No. 214,637
Int. Cl. G03b *35/10*
U.S. Cl. 95—18 R **12 Claims**



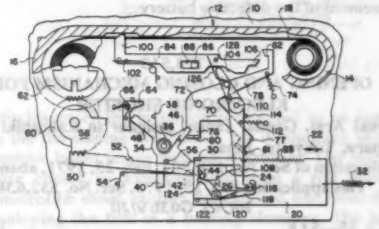
In the double optical system of a twin lens camera, a control device including a single interceptor unit for adjustably varying the size of the exposure apertures of both optical systems. In such a system a control device including a single interceptor unit for inserting filters into both of such optical systems. As useful in such inserter control device, an overcenter spring with one end operated in an arc. A module combining such control devices and such overcenter spring.

3,774,513

DEVICE FOR PREVENTING FILM MOVEMENT IN CAMERAS

Helmut Ettischer, Ruit; Wolfgang Ort, Stuttgart-Bad; Horst Simon, Fellbach, and Kurt Steisslinger, Stuttgart, all of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,631
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM **7 Claims**



A camera for roll film perforated at predetermined metering intervals includes a transport mechanism for advancing the film along an exposure plane and a metering mechanism having an inactive condition and an active condition for stopping film transport when the film is correctly positioned for exposure. A film sensing pawl is mounted for movement between a retracted position resting on the film surface, an extended position transversing the film while in a film perforation and a metering position spaced from the extended position in the direction of film advancement. A resilient force is selectively applied to the sensing member in a direction urging the sensing member from its metering position toward its extended position. The force on the sensing member is relieved at least during operation of the camera's exposure mechanism so that the force is not transmitted by the sensing member to the filmstrip.

3,774,514

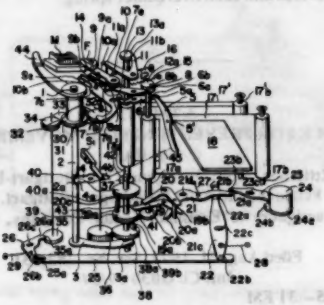
ELECTRIC CONTROL CIRCUITRY FOR CAMERA CURTAIN SHUTTERS

Akio Okamoto, Ikuno-ku, Osaki-shi, and Toshiaki Matsumoto, Amagasaki-shi, Hyogo-ken, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 17, 1973, Ser. No. 324,333
Int. Cl. G03b *9/32*
U.S. Cl. 95—31 EL **4 Claims**

A circuit for actuating shutter to control an exposure in a camera includes structure for detecting incorrect movement of the shutter as an indication that the battery voltage is insuf-

ficient for blocking release of the trailing member of the shutter to properly control the exposure. The operation of the



camera is blocked when the movement of the shutter is incorrect and the normal operation of the camera is restored upon replacement of the defective battery.

3,774,515

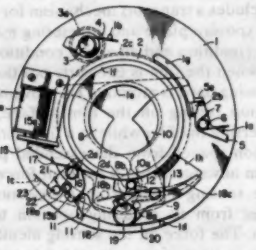
OPENING AND CLOSING MECHANISM FOR ELECTRONIC SHUTTER

Kiyoyuki Arai, Gyoda, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Continuation of Ser. No. 118,902, Feb. 25, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,638

Int. Cl. G03b 9/20

U.S. Cl. 95—53 E **2 Claims**



A mechanical arrangement for electronically controlled photographic shutter, includes a ring rotatably mounted around the exposure aperture of the camera and, a pair of shutter blades coupled to each other and rotatably mounted respectively on fixed pins extending from said ring, one of which blades having an urging spring mounted thereon to act in the opening direction, a cam face adapted to be brought into engagement with said one of the blades having an urging spring in accordance with the movement of said ring to impart the blades a motion to open progressively, and a closing member capable of engaging, whenever a proper exposure has been obtained, the spring urged blade even in the midst of the blade's opening motion by the action of an electromagnet connected to an electronic exposure time control circuit thereby coercively displacing the shutter blades toward the closing directions. The above described arrangement is operative so that, upon generation of an electric signal indicating the completion of an exposure, the exposure aperture is closed without delay.

3,774,516

PHOTOGRAPHIC CONTROL SYSTEM AND APPARATUS HAVING SELF-MONITORING FEATURES

John P. Burgarella, Sudbury; Peter P. Carcia, Reading, and Richard C. Kee, Chestnut Hill, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1971, Ser. No. 213,303

Int. Cl. G03b 19/12

U.S. Cl. 95—42 **53 Claims**

Photographic system and apparatus in the form of a highly automated reflex camera is described. The camera incorporates a multi-gate control circuit operating the components thereof through the operational phases in the course of a single photographic cycle. In the course of each such cycle, phase changes are monitored by transducers acting as an electrical-mechanical interface within the system. The camera also features an automatic circuit reset operation in the event of a cycle malfunction.

3,774,517

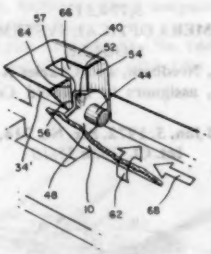
NON-BOUNCING HINGED FLARE BAFFLE

Charles De Jesus, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,890

Int. Cl. G03b 19/12

U.S. Cl. 95—42 **7 Claims**



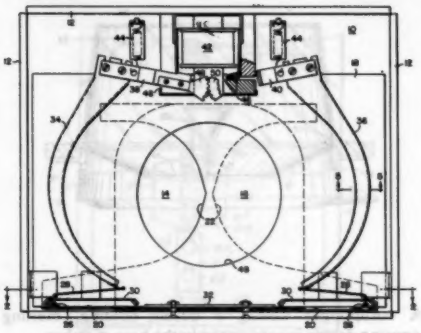
The present invention concerns a hinged flare baffle for use in a reflex camera. It incorporates a detent mechanism that inhibits the bouncing of the flare baffle without positively locking the flare baffle in its uppermost position. A spring rapidly rotates the flare baffle upward against a stop. As the flare baffle reaches the stop, the detent engages a cavity to prevent the flare baffle's bouncing back from the stop and into the camera's optical path due to the impact. A capping plate presses down on the flare baffle over-powering the detent mechanism and causing it to disengage as the reflex camera changes to a focusing mode of operation.

3,774,518

LARGE DIAMETER PHOTOGRAPHIC SHUTTER

Andrew W. Vincent, 65 Aberdeen St., Rochester, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,727
Int. Cl. G03b 9/40
U.S. Cl. 95—56 4 Claims



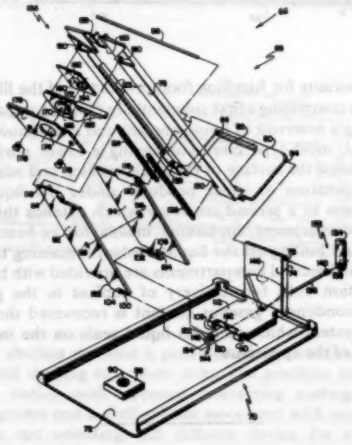
A photographic shutter having a large aperture (about 2½ inches) that can be driven at relatively high speed by an electromechanical actuator. The shutter has two blades of very thin sheet material that are reciprocated in opposition to each other in translation only. The blades have integrally formed flanges that stiffen them and provide the strength needed to keep them from buckling. The actuator is connected to the blades through relatively long levers to achieve the desired length of travel with adequate allowance for the rotational output motion of the actuator.

3,774,519

FOLDING TRIPOD ADAPTER

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,810
Int. Cl. G03b 17/56
U.S. Cl. 95—86 13 Claims



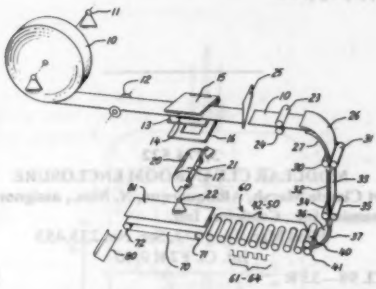
A folding adapter for use with a photographic camera having an optical axis in a non-parallel orientation with respect to a supporting base of the camera. The adapter includes a first section for supporting a photographic camera and a second section pivotally connected to the first. The first section is angularly movable with respect to the second section. The adapter permits a realignment of the camera's optical axis to a horizontal position such that it may be conveniently coupled with a conventional tripod or positioned on a flat surface.

3,774,520

DEVELOPING MECHANISM FOR MICROFILM

Alan J. Smith, 2401 Walnut Ave., New Brighton, Minn., and Irwin L. Irwin, 10480 Partridge St., Coon Rapids, Minn.

Filed June 23, 1972, Ser. No. 265,556
Int. Cl. G03d 3/00
U.S. Cl. 95—89 R 12 Claims



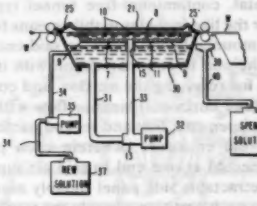
The disclosure of the invention is directed to an improvement in the developing mechanism for duplicating sheets of heat sensitive latent image bearing microfilm. The microfilm sheets are copied by exposing film from a roll through a master microfilm sheet, cutting the exposed film from the roll and developing the film in a heating chamber. The heating chamber contains thermostatically controlled heating elements to maintain the temperature at substantially 285°–290° Fahrenheit for a dwell time of 5 – 7 seconds. The film is continuously moved through the heating chamber by a roller conveyor providing a continuously moving and changing contact area with the film on an emulsionless surface. The film is transferred to a belt conveyor having end rollers no larger in diameter than the rollers in the roller conveyor but having a flat surface to provide cooling for the developed sheets before being delivered to a collection point in the mechanism.

3,774,521

PHOTOGRAPHIC DEVELOPING APPARATUS

Robert Haun Beck, Fair Haven, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 79,214, Oct. 8, 1970, abandoned, Continuation-in-part of Ser. No. 886,618, Dec. 19, 1969, Pat. No. 3,635,144. This application Nov. 2, 1972, Ser. No. 303,053
Int. Cl. G03d 1/02
U.S. Cl. 95—89 R 10 Claims



Developing apparatus for the rapid development of photographic silver halide elements, e.g., sheets or plates, having a

series of spaced solution-applying plates having (1) a plurality of spaced slots of small cross-section for supplying photographic treating solutions to the surface of the applying plates and to a single surface of the photographic elements passed across the applying plates, and (2) a collection and storage tray for receiving excess solution flowing over the edges of the plates. Between the applying plates are pressure or squeegee rolls for removing expended solutions, drip pans for the solutions, cover plates extending over the applying plates and flexible sealing strips at the entrance and exit lips of the cover plates, which strips are adapted to press against the back surface of the photographic elements. Metering weirs control the rate at which treating solution is expended. The apparatus can have a self-threading drying chamber adjacent the final solution applying plate.

3,774,522

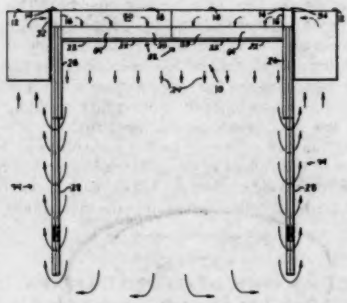
MODULAR CLEAN ROOM ENCLOSURE

Robert Claude Marsh, Albuquerque, N. Mex., assignor to Bio-Dynamics, Inc., Castleton, Ind.

Filed Mar. 10, 1972, Ser. No. 233,453

Int. Cl. F24f 9/00

U.S. Cl. 98—33 R **1 Claim**



A portable, modular room enclosure having an open end providing horizontal, contaminant-free tunnel type laminar flow for surgery or the like includes mobile means for generating an air flow demountably connected to said enclosure, air supply means in the unit in communication with the air flow generating means for receiving the air flow and converting it to a contaminant-free horizontal laminar flow within the enclosure toward the open end, first and second partitions forming side walls of the enclosure, wherein each partition is demountably connected at one end to said air supply means and at least one retractable side panel slidably mounted on a track connected to each partition wherein the track and panel are in parallel relation with the partition. By extending or retracting the side panels the length of each partition may be selectively changed to accommodate the needs of a surgery theater or the like.

3,774,523

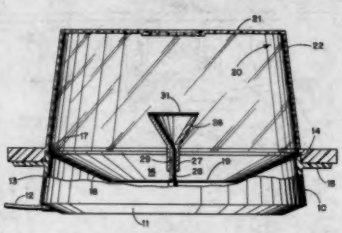
CORN POPPER

John R. Moot, Cambridge, Mass., assignor to Cornwall Corporation, Boston, Mass.

Filed Dec. 10, 1971, Ser. No. 206,790

Int. Cl. A23l 1/18; A47j 37/10; B05c 5/02

U.S. Cl. 99—323.8 **16 Claims**



A cornpopper having a butter holding, melting and dispensing device incorporated in the base member.

3,774,524

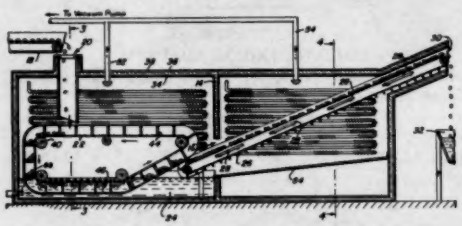
APPARATUS FOR HANDLING FOOD PRODUCTS AND THE LIKE

Henry H. Howard, 1305 Ensenado Dr., Apt. 3, Modesto, Calif.

Continuation-in-part of Ser. No. 176,539, Aug. 31, 1971, abandoned. This application Feb. 11, 1972, Ser. No. 225,468

Int. Cl. A23l 1/10, 1/12, 3/36

U.S. Cl. 99—483 **22 Claims**



An apparatus for handling food products and the like, said apparatus comprising a first substantially closed compartment containing a reservoir of liquid coolant and a continuous multisectional, mesh-type conveyor having a lower portion extending below the surface of the liquid coolant and adapted to advance potatoes or other products under the liquid and deliver them to a second conveyor which extends through a second compartment containing means for re-heating the product and boiling off the liquid coolant remaining thereon. The first and second compartments are provided with banks of condensation coils for recovery of coolant in the gaseous state. Uncondensed gaseous coolant is recovered through a vacuum system which includes liquid seals on the inlet and discharge of the apparatus.

ERRATUM

For Class 99—460 see:
Patent No. 3,774,304

3,774,525

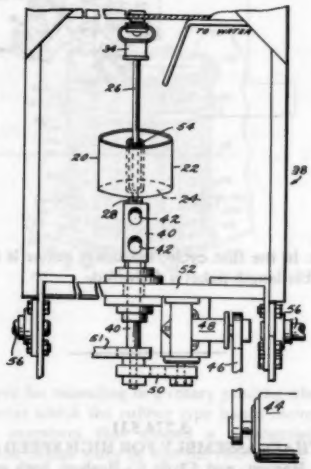
APPARATUS FOR PEELING EGGS

Leslie W. Driggs, West Sand Lake Extension, West Sand Lake, N.Y.

Division of Ser. No. 54,969, July 15, 1970. This application May 24, 1972, Ser. No. 256,515

Int. Cl. B02c *17/00*; A47j *43/00*

U.S. Cl. 9—568 11 Claims



Apparatus for peeling eggs is disclosed, wherein the apparatus comprises a generally cylindrical chamber and means for orbiting the chamber in such a way that outside surfaces of the eggs are flexed very rapidly so as to separate the egg shells and their membranes from the cooked egg whites.

3,774,526

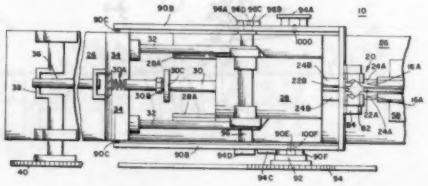
NUT SHELLING MACHINE

Clarence T. Nemir, Kenwood, Md., assignor to Carribean Cashew Company, Milwaukee, Wis.

Filed Apr. 27, 1971, Ser. No. 137,753

Int. Cl. A23n *5/00*

U.S. Cl. 99—582 20 Claims



A nut shelling machine is provided for the continuous and automated shelling of cashew nuts. The machine includes a shelling station with opposed interacting cutting blades, cutting guides and a shell splitter associated with one cutting blade, a nut orienting and delivery device for supplying cashew nuts to said shelling station in an eye-down position; and a nut transferring mechanism taking one nut at a time from the orienting and delivery device effecitvely rotating same 90° about the nut "eye" before placing it between the guides and blades in the shelling station. All of these elements of the shelling machine are driven in common synchronism from a common timing chain through suitable cams, gears and/or eccentrics.

3,774,527

MACHINE FOR TYING OF PACKINGS

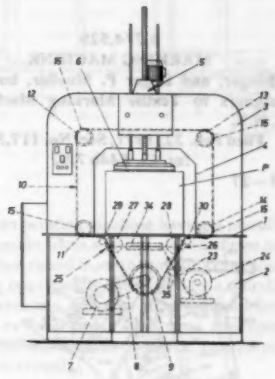
Hans Hugo Buttner, Mettman, Germany, assignor to F. A. Buttner Kommanditgesellschaft Maschinenfabrik, Gruiten, Germany

Filed Oct. 18, 1971, Ser. No. 190,231

Claims priority, application Germany, Oct. 19, 1970, P 20 51 206.5

Int. Cl. B65b *13/10*

U.S. Cl. 100—27 9 Claims



A machine for tying of packing pieces, of piles of packings or the like, in which tying material is guided around a packing piece disposed on a supporting table and is brought after a following pull back of the over length into the taut engagement position on the packing piece, which comprises tying means, and a feeder belt running on a predetermined path as a carrier of the tying means fed around a packing piece. The feeder belt has a groove open towards the packing piece for a clamping mounting of the tying means. The cross-section of the feeder belt is enlarged at least within the range of the entrance location of the tying means due to elastic deformation of the feeder belt within the range of the location.

3,774,528

DISC TYPE PRESS

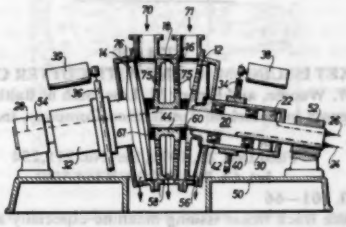
Rolf Bertil Reinhall, Killingevagen, 16, Lidingo, Sweden

Filed Nov. 22, 1971, Ser. No. 200,986

Claims priority, application Sweden, Dec. 4, 1970, 16480/70

Int. Cl. B30b *3/04*, *9/20*

U.S. Cl. 100—121 8 Claims



A disc type press for expression of liquid from suspensions of particle material comprising substantially coaxially

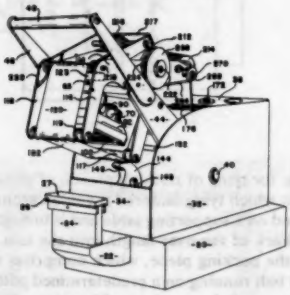
mounted press discs adapted to be urged towards one another while rotating in the same direction and defining a progressively constricted pressing interspace between the discs. The material to be dewatered is introduced at the space where the interspace between the discs is relatively wide and squeezed when passed to the place of narrowest spacing between the discs. In order to increase the capacity of the press without any appreciable increase of the outer dimensions of the press and of the structural elements absorbing the stresses produced by the pressing forces, at least one additional central press disc is inserted between the outer press discs. Preferably the additional press disc or discs are mounted axially displaceable on a shaft carrying the outer discs.

3,774,529

MARKING MACHINE

John F. Filsinger, and Roger P. Mueller, both of Syracuse, N.Y., assignors to Textile Marking Machine Co., Inc., Syracuse, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,581
Int. Cl. B44b 7/02
U.S. Cl. 101—27 9 Claims



Machine for permanent imprinting upon cloth fabric comprising a platen to support a piece of fabric, mechanism for moving a ribbon having a heat activated resinous coating from a retracted position to a position substantially overlying the platen, and for moving a heated printing plate having raised print faces thereon toward said platen in spaced relation to the ribbon and power mechanism for applying the print faces under pressure to the ribbon and fabric; to transfer and heat set resin from the film upon and into the fabric whereupon to imprint upon the fabric in transferred and heat set resin the indicia of the print faces of the heated print plate.

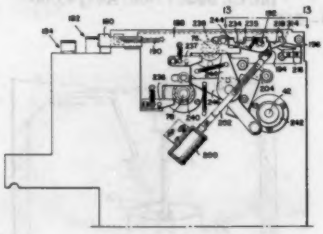
3,774,530

TICKET ISSUING MACHINE WITH CUTTER CONTROL

Paul W. Woodie, and Emery M. Low, both of Baltimore, Md., assignors to American Totalisation Company, Inc., Towson, Md.

Filed Dec. 23, 1971, Ser. No. 211,254
Int. Cl. B41j 45/00; B26d 5/20
U.S. Cl. 101—66 4 Claims

A race track ticket issuing machine especially adapted for feature betting is a standard Daily Double machine modified so that it can operate either in the conventional mode issuing Daily Double, Exacta or Quinella tickets, or, by operation of a selector, in a different mode in which it issues double-length tickets for feature bets involving three or four runners. In the latter mode, the machine operates in two ordinary Daily Double cycles. In the first cycle, the ticket cutter is inhibited so that a double-length ticket is delivered.

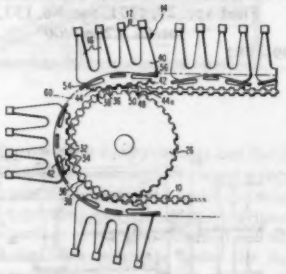


3,774,531

PRINT CHAIN ASSEMBLY FOR HIGH SPEED PRINTER

Robert L. Hansen, and Clyde C. Roshon, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1971, Ser. No. 155,003
Int. Cl. B41j 5/08
U.S. Cl. 101—93 C 5 Claims



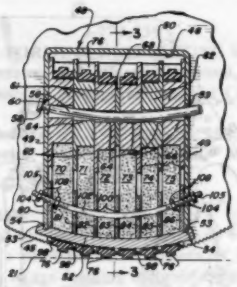
A print chain structure for a high speed printer, wherein an endless dual timing-belt has a series of teeth on an inner surface thereof for engagement with a belt driving mechanism. The belt also has a series of teeth on its outer surface. A series of printing elements include interruptions which mechanically and removably cooperate with interstices of the teeth on the outer surface of the belt so that the belt-driving mechanism may efficiently drive the printing elements and the elements may be readily removed for servicing when the need arises. An improved guiding means is also provided for controlling the high speed movement of the printing elements with the belt.

3,774,532

NUMBERER FOR PRINTING WHEEL

James G. McKay, Chicago, Ill., assignor to Kiwi Coders Corporation, Chicago, Ill.

Filed Jan. 14, 1972, Ser. No. 217,863
Int. Cl. B41j 5/20
U.S. Cl. 101—111 7 Claims



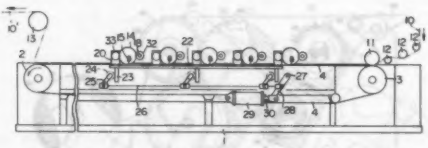
A numberer for mounting in a rotary printing wheel having the bridge over which the rubber type bands move provided with guide members that extend a substantial distance laterally of the bridge sides so that the rubber type bands are guided as they approach and leave the bridge to prevent shifting of said bands.

3,774,533

ROTARY SCREEN PRINTING MACHINE WITH INTERNAL SQUEEGEE

Shiro Ichinose, 11-8, 4-chome, Shinohara Kita-machi, Nada-ku, Kobe, Japan

Filed Mar. 9, 1972, Ser. No. 233,038
Claims priority, application Japan, Dec. 15, 1971, 46/101042
Int. Cl. B41l 13/00
U.S. Cl. 101—119 7 Claims



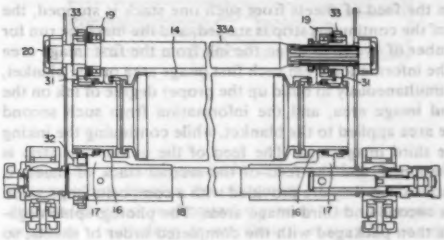
A rotary screen printing machine wherein the rotary screen rises from the printing operation position at the time of termination of the printing operation and at this risen position the rotary screen is driven and rotated independently of the printing belt, whereby an undesired phenomenon that at the time of stoppage of the printing operation a printing paste or ink flows out through the screen onto the material to be printed or the printing belt and causes contamination of the material to be printed upon can be effectively prevented.

3,774,534

ROTARY SCREEN PRINTING MACHINE

Shiro Ichinose, 11-8, 4-chome, Shinohara Kita-machi, Nada-ku, Kobe, Japan

Filed Mar. 9, 1972, Ser. No. 233,039
Claims priority, application Japan, Dec. 15, 1971, 46/101043
Int. Cl. B41l 13/00
U.S. Cl. 101—119 8 Claims



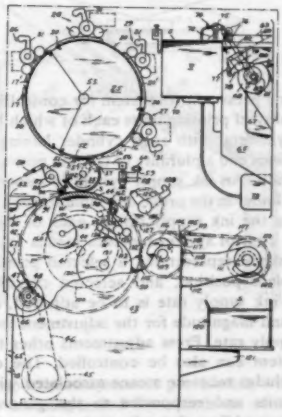
A rotary screen printing machine having a plurality of printing sections, wherein when a rotary screen of one printing section is at a position raised from the printing operation position, and the printing operation is conducted by a plurality of printing sections alternately, whereby time required for change of color or design or for washing of screens, squeegees, etc. can be greatly minimized and the machine operation efficiency can be greatly increased.

3,774,535

SYSTEM OF AND APPARATUS FOR PRINTING BUSINESS FORMS

Robert J. Crissy, West Caldwell, N.J., assignor to NJM, Inc., Hoboken, N.J.

Filed Apr. 12, 1971, Ser. No. 133,274
Int. Cl. B65h 3/44
U.S. Cl. 101—142 19 Claims



In the practice of the system herein, there are prepared three image areas for printing two associated, but different business formats utilizing one photographic negative containing peculiar information common to both of the formats. A first image area is provided with information relating to one of

the formats, a second image area is provided with information related to the other format, and the third image area prepared from the negative is provided with the peculiar information common to both formats. The printing apparatus contains a roll made of a continuous strip of inexpensive paper, and a stack support on which are alternately placed two stacks of sheets on which the two business forms are to be printed. Means are provided for separately feeding the sheets and portions of the continuous strip to the printing station. During the continuous printing operation one of the forms is initially printed using only the first and third image areas to provide composite impressions that are applied to one stack of sheets. When the feed of sheets from such one stack is stopped, the feed of the continuous strip is started, and the machine run for a number of cycles to clean the ink from the first image area and the information from such first image area on the blanket, and simultaneously to build up the proper degree of ink on the second image area, and the information from such second image area applied to the blanket, while continuing the inking of the third image area. The feed of the continuous strip is then stopped, and the feed of the second stack of sheets is started, so that they are provided with a composite impression of the second and third image areas. The photographic negative is then packaged with the completed order of sheets, so that when it is necessary to reorder the same, all that is need done is to forward the negative to the printer.

3,774,536

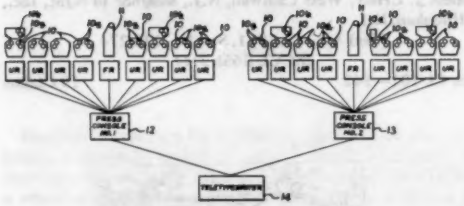
PRINTING PRESS CONTROL SYSTEM

Francis A. Raymond, Nashua, N.H., and Robert L. Vogler, Norridge, Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 735,621, June 10, 1968, abandoned. This application Aug. 9, 1971, Ser. No. 170,048

Int. Cl. B41f *31/04*

U.S. Cl. 101—207 **4 Claims**



A printing press control system for controlling a press having a plurality of printing units each of which has at least two printing cylinders, with each cylinder having a plurality of plate positions and a plurality of column positions within each plate position. An ink supply system is associated with each printing cylinder in the press, and includes means for separately adjusting the ink supply rate at each of the column positions. The control system includes means for generating an electrical signal representing a selected printing cylinder, a selected plate position, and selected column positions at which the ink supply rate is to be adjusted, and a selected direction and magnitude for the adjustment to be effected in the ink supply rate. Press adjustments other than in the ink supply system can also be controlled. The control system further includes receiver means associated with each of the printing units and responsive to the generated electrical signals for enabling the adjusting means at the selected cylinder, plate position, and column positions. The receiver means also energizes the selected adjusted means in the desired direction until an adjustment of the desired magnitude is effected, and then automatically de-energizes the adjusting means.

3,774,537

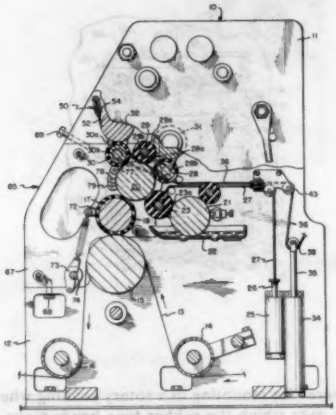
ROTARY OFFSET PRINTING PRESS WITH REMOVABLE PLATE CYLINDER UNIT

Chris A. Christoff, Lancaster, Calif., assignor to Stevens Corporation, Fort Worth, Tex.

Filed July 15, 1970, Ser. No. 55,016

Int. Cl. B41f *5/04, 7/02*

U.S. Cl. 101—219 **3 Claims**



There is disclosed in connection with an offset rotary printing press, means for inserting therein different diameters of plate cylinders, and as an assembly with each plate cylinder, form roller cam stop means for precisely spacing the form rollers with respect to each different diameter plate cylinder. In conjunction with the foregoing, a unique form roller actuating system is disclosed.

3,774,538

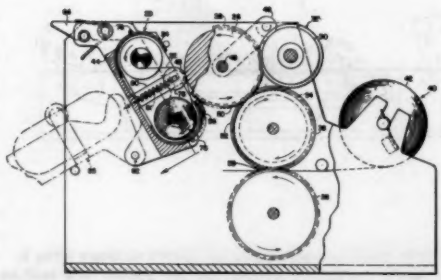
INK WEB CASSETTE FOR ROTARY PRINTING SYSTEM

Edward K. Bullock, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 27, 1970, Ser. No. 93,136

Int. Cl. B41f *31/00*

U.S. Cl. 101—336 **8 Claims**



A printing system, particularly adapted for clean, economic printing of small quantities with a minimum of makeready, employs a disposable ink web for providing a source of ink preworked to proper printing consistency. The ink web, which is an elongated strip of flexible material carrying preworked printink ink, is supplied in pre-inked form and is adapted to be mounted in the printing press and fed by the press drive in

synchronism with the rotary motion of the plate cylinder for application of ink of proper printing consistency from successive portions of the web to the press plate throughout the length of the web. Preferably, the web is supplied in a disposable cassette which is releasably mounted in the press in connection to the drive thereof, and includes at least one opening for exposing portions of the web for inking of the press-plate.

3,774,539

COLOR-FORMING DUPLICATING METHOD

Yoshihide Miyazawa, and Minoru Ozutsumi, both of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed May 15, 1972, Ser. No. 253,472
Claims priority, application Japan, May 20, 1971, 46/33578; Apr. 28, 1972, 47/42183
Int. Cl. B41m *5/00*
U.S. Cl. 101—469 6 Claims

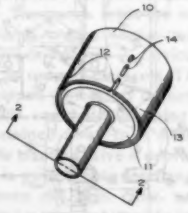
Hectograph duplication is carried out by bringing a master sheet carrying a predetermined pattern of images which is formed with an image-forming material consisting essentially of a colorless color forming compound selected from N-bis(p'-dimethylaminophenyl)methyl-m-hydroxymethyl-aniline and N-bis(p'-dimethylaminophenyl)methyl-p-β-hydroxyethyl aniline and a vehicle into contact with a copying sheet coated with a reactive solid material effective for developing the colorless color forming compound after wetting the coated surface of the copying sheet with a volatile neutral organic liquid capable of dissolving the colorless color forming compound but not capable of adversely effecting the reactivity of the reactive solid material, and developing the colorless color forming compound transferred onto the coated surface of the copying sheet so as to produce violet blue images.

3,774,540

TERRADYNAMIC BRAKE

Milton K. Burford, China Lake, Calif.; Robert A. Simpson, Mound, and Rodney A. Bernardin, Wayzata, both of Minn., assignors to the United States of America, as represented by the Secretary of the Navy

Filed Dec. 1, 1971, Ser. No. 203,564
Int. Cl. F42b *25/00*
U.S. Cl. 102—2 1 Claim



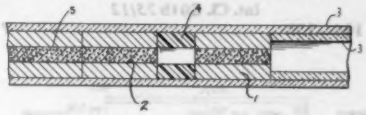
A terradynamic brake of tubular configuration adapted to be attached around a projectile-like package which is to be air dropped or otherwise launched and operable to deploy upon striking the ground whereby penetration of the earth is limited. The brake has series of slots aligned with each other. The slots are parallel to the axis of the tube. The forward-most of each series extends from the forward edge of the brake. Upon earth impact, the arch-like portions of brake located between the forward-most slots are bent outward to approximately right angles to the brake axis.

3,774,541

SELECTION CONTROL METHODS FOR EXPLOSIVE SYSTEMS

Francis H. Bratton, P.O. Box 473, 143 Climax Rd., Avon, Conn.

Filed May 3, 1971, Ser. No. 139,685
Int. Cl. C06c *5/04*
U.S. Cl. 102—27 R 12 Claims



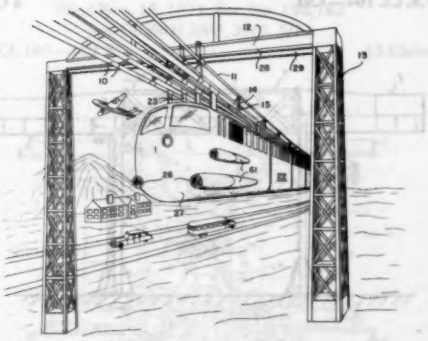
Selective control methods are provided for explosive systems which involve the placement of agents which act by dilution, physical or chemical means to alter the sensitivity of explosive (including pyrotechnic) materials or devices wherein: (1) the release may occur by the melting of the agent, rupture of a container or by pumping; (2) the agent is confined as a solid, is within a container capsule, is physically placed or mixed within the explosive as small or large pieces, is coated or molded on the walls or other parts of the device, or is held in an inactive position outside the action zone but is so arranged that it will be effectively placed on receipt of signal; (3) the signal to deactivate or activate may be heat supplied by the environment, or from an activating unit incorporated in the system, or pressure, or mechanical activation, wherein the signal may be the result of a command or set, or the output of a transducer control system.

3,774,542

TRANSPORTATION SYSTEM

Robert L. Walsh, 3025 Cleveland Ave., N.W., Washington, D.C.

Filed Oct. 20, 1971, Ser. No. 190,765
Int. Cl. B61b *3/02*, *7/06*, *13/08*
U.S. Cl. 104—89 15 Claims



A rapid transportation system is provided in which one or more vehicles are suspended from sleds or runners which move in a substantially tubular track supported some distance above the earth along a right of way by cables or the like. The sleds with the vehicles depending therefrom are propelled along the tracks by one or more jet engines. Braking means are provided which move brake shoes carried by the sleds into braking engagement with the inner upper surface of the track.

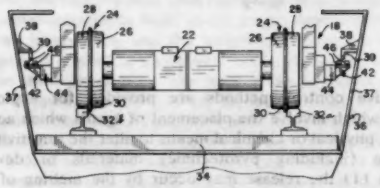
Means are also provided for positioning the jet engines selectively to effect a braking action, or a lifting action. Airfoils serving like purposes are also provided.

3,774,543

PASSENGER VEHICLE STATIC SWITCHING APPARATUS

Patrick George Welsh, Chicago, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 8, 1971, Ser. No. 206,003
Int. Cl. E01b *25/12*
U.S. Cl. 104—130 7 Claims



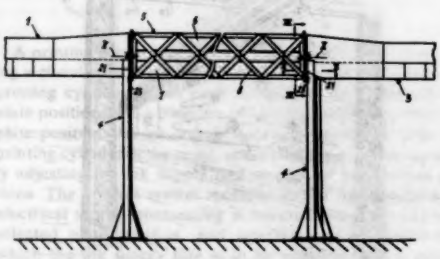
A device for switching a passenger vehicle riding on rails between two track sections wherein only stationary track portions are involved. A double rim wheel is used in the vehicle and combines with a truck mounted guide rail engaging device to switch passenger vehicle from a first to a second track portion. Guide rails are mounted adjacent and above each supporting track member and engageable by the truck mounted guiding device to automatically urge the vehicle along a selectable track portion.

3,774,544

SWITCHING SYSTEM FOR A MOVING UNIT GUIDED ALONG A TRACK

Paul Mouillon, Lyon, France, assignor to Maurice Barthalon, Verrieres-Le-Buisson (Essonne), France

Filed Mar. 10, 1972, Ser. No. 233,551
Claims priority, application France, Mar. 16, 1971, 7109087
Int. Cl. E01b *25/26*
U.S. Cl. 104—130 4 Claims



The invention relates to a switching system for a moving unit especially an air-cushion vehicle guided along a track, to have a selective connection between a main track and either of two branch tracks. The switching system comprises an assembly of two track sections. This assembly is mounted on an axis of rotation which is external to each branch track. By operating this assembly around this axis of rotation, one of the desired connections between the main track and the branch tracks can be obtained through one of the track sections.

3,774,545

CONVEYOR CHAIN STRUCTURE

Karl R. M. Karlstrom, Warren, Mich., assignor to American Chain & Cable Company Inc., New York, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,386
Int. Cl. B65g *17/38*
U.S. Cl. 104—172 C 13 Claims

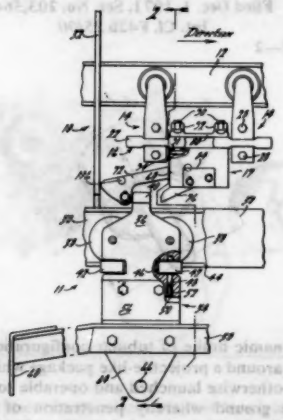
A conveyor structure including a power track in which a conveyor chain travels and a free track along which free trolleys travel. The conveyor chain includes alternate main links that the pivotally interconnected by alternate pairs of upper and lower links through pivot pins. The construction of the links and pivot pins is such that there is permissible movement between the main links and the pivot pins about horizontal axes and permissible movement between the pairs of links and pivot pins about vertical axes. In one form, the conveyor comprises a tow line conveyor structure including a floor having a track slot therein through which the tow pin of carriers or tow carts is adapted to extend and a chain supporting structure beneath the slot. In another form, the conveyor comprises an overhead power and free conveyor comprising a load supporting free track on which the carriers are movable and a power track in which the conveyor is moved.

3,774,546

CONVEYOR APPARATUS

Robert Krammer, Farmington, Mich., assignor to Seatech Engineering, Inc., Southfield, Mich.

Filed June 7, 1971, Ser. No. 150,362
Int. Cl. B61b *13/00*
U.S. Cl. 104—172 S 17 Claims



This disclosure pertains to a novel spring biased pusher dog assembly for conveyors. This assembly is disclosed incorporated in an overhead power and free conveyor system, in one embodiment as part of the power line conveyor in which it

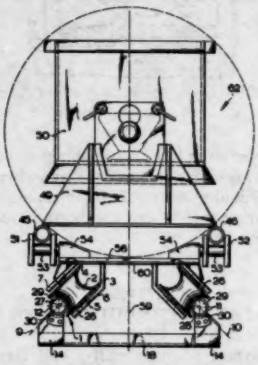
performs a releasable driving function, and in another embodiment as part of the free line conveyor in which it performs a releasable driven function. The novel assembly is disclosed in a further embodiment performing a driving function as part of a subfloor towline conveyor. There is also disclosed means for rendering the releasable function of the assembly inoperable in those zones of the conveyor where such is desired, as well as means for preventing any driving or driven function at all in any zone desired.

3,774,547

TRANSPORT SYSTEM FOR UNDERGROUND MINING

Hans Widiger, Neukollner Strasse 73a, Oberhausen-Sterkrade, and Dieter Hoffmann, Ruhrblick 16, Hattingen, both of Germany

Filed Nov. 19, 1970, Ser. No. 91,004
Int. Cl. B61b *13/00*
U.S. Cl. 104—244 1 Claim



A transport system for underground mining in which the cars, including the tractor and the trailer cars, have a plurality of supporting wheels in the form of flanged rollers provided with concavely curved surfaces which engage a track consisting of a pair of longitudinally extending convexly curved rails, the flanged rollers being inclined downwardly and outwardly so that only a portion of the roller bears against the cylindrical rail. The rails are carried by eccentric brackets which are secured to ties in the form of upright U-beams. The axles for the rollers are mounted for convenient removal for replacement purposes. The car is made up of a pair of horizontal plates, one of which rotates relative to the other about a central pivot. A cylindrical arm is carried on each side of the swingable plate as support elements. The cars, except for the tractor, are equipped with safety brakes for clamping engagement with the rails, and these are spring urged to braking position, but are retained away from braking position by fluid pressure. A cable traction drive is provided for the tractor, the cable of which is guided between flange rollers mounted on the track between the rails. Also arranged on the track between the rails are idler cable guide rollers.

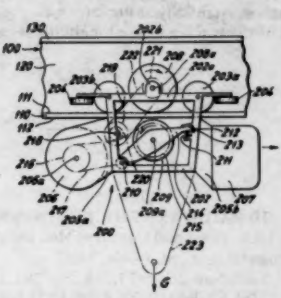
3,774,548

GRIPPING LOCOMOTIVE FOR SUSPENDED RAILWAY

Adolf H. Borst, Alte Steige, 7441 Altenriet, Germany

Filed Jan. 13, 1971, Ser. No. 106,222
Int. Cl. B60l *5/40*; B61b *3/02*; B61j *1/06*
U.S. Cl. 105—30 45 Claims

This invention relates to a series of different types of electrically driven trolley devices arranged to be suspended from and driven along a network of overhead trackways by frictional drive rollers. The trolleys disclosed may be driven in alternate manners by the frictional drive rollers either engaging the upper flange of the trackway as well as the lower flange thereof or only by engagement with the lower flange of the trackway. Current is derived from a cart which may be arranged to travel with the trolley or by electricifying portions of the trackways per se. Also revealed is a system of trackway controlling switches for moving the trolleys from horizontal to vertical directions and through junction points therebetween as well as means by which one trolley can pass another in the



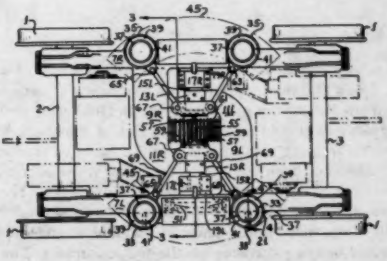
network system when desirable. Herein is also disclosed a system for accumulating containers of a particular design adjacent to a vertical shaft the accumulation area including mechanism for shifting the containers from a horizontal plane relative to the accumulation area and into the shaft to be attached to a trolley or for removing the containers from the trolleys to be returned to the accumulation area. Further, also disclosed is a support structure for novel containers which is controlled electrically to prevent the containers from deviating from desired positions while in transit on the trackway.

3,774,549

FLUID SPRUNG RAILWAY TRUCK

Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Nov. 15, 1971, Ser. No. 198,702
Int. Cl. B61f *3/08*, *5/10*, *5/14*
U.S. Cl. 105—182 R 13 Claims



A railway vehicle includes a truck having a pair of wheeled axles, truck framing supported on the axles, a vehicle body carried on the framing by separate flexible wall pneumatic spring devices seated on opposite sides of the truck framing. The truck framing is connected to the body to transmit lon-

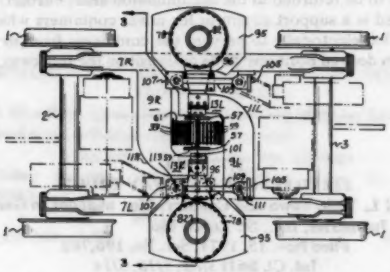
gitudinal forces from the one to the other while accommodating their relative transverse and swivel movements. The spring devices are secured to the truck framing and have bearing means at their upper ends in slidable engagement with horizontal bearing surfaces on the vehicle body, the bearing means being vertically apertured to permit pressurized air from the spring devices to bear against the bearing surfaces. The bearing means includes a reservoir for the flexible wall springs, eliminating the need for apertures in the body bearing surface to provide for passage of air from body mounted reservoirs and the springs. Longitudinal links hold the bearing means against substantial longitudinal movement relative to the truck framing and additional generally transverse linkage means restrict the bearing means to arcuate movement about a vertical axis substantially at the intersection of the transverse center line of the truck and the longitudinal center line of the body.

3,774,550

FLUID RAILWAY VEHICLE SUSPENSIONS

Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Nov. 26, 1971, Ser. No. 202,129
Int. Cl. B61f *3/08*, *5/10*; F61f *5/14*
U.S. Cl. 105—182 R **10 Claims**



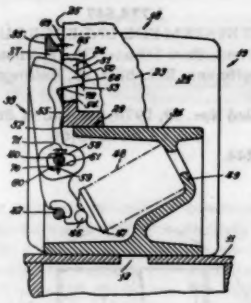
A railway vehicle includes a truck having a pair of wheeled axles, truck framing supported on the axles, a vehicle body carried on the framing by separate flexible wall penumatic spring devices seated on opposite sides of the truck framing. The truck framing is connected to the body to transmit longitudinal forces from the one to the other while accommodating their relative transverse and swivel movements. The spring devices are secured to the body and have similar bearing members on their lower ends in slidable engagement with horizontal bearing surfaces on the truck framing. The spring reservoirs are in the vehicle body, and the bearing members are held against longitudinal movement relative to the body and restricted to arcuate movements about the truck center. This arrangement eliminates the need for apertures in the bearing surfaces to provide air to the springs, as in some known arrangements wherein the springs are fixed to the truck and slidable with respect to the bearing surface on the car body, and the spring reservoir is in the car body.

3,774,551

CONTAINER SECURING MEANS FOR A TRANSPORT CARRIER WITH LATCH VARIABLY PIVOTED TO ACCOMMODATE DIFFERENT CLEARANCES

Theodore J. Sweger, Lake Worth, Fla., assignor to Illinois Railway Equipment Company, Chicago, Ill.

Filed Sept. 21, 1972, Ser. No. 290,998
Int. Cl. B60p *7/08*; B65j *1/22*
U.S. Cl. 105—366 C **5 Claims**



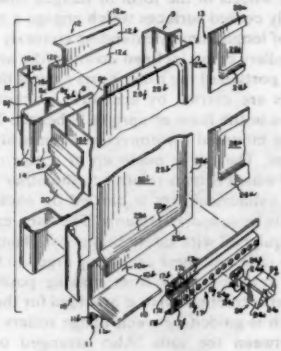
A spring biased latch lever is variably pivoted on the housing of container securing means on a transport carrier to accommodate minimum and maximum clearances between the container securing means and the bottom container fitting mounted thereon.

3,774,552

RAILROAD CAR CONSTRUCTION WITH BELT RAIL DESIGN

Richard C. Snyder, Michigan City, and Harold A. Wold, New Buffalo, both of Mich., assignors to Pullman Incorporated, Chicago, Ill.

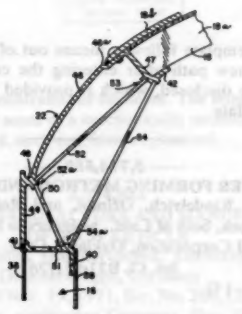
Filed Jan. 3, 1972, Ser. No. 214,875
Int. Cl. B61d *45/00*, *17/08*
U.S. Cl. 105—369 B **5 Claims**



In a railroad car or the like, the combination of placement of an inside mounted belt rail in a recessed or dished out panel at the approximate juncture of the side wall with the end wall, the corner post being outwardly of the end wall and the side wall, and an upright corner bar interposed between the belt rail and the end wall of the car whereby a plurality of belt rails in recessed panels in the side wall on each side of the car can, therefore, extend most of the length of the car, a plurality of such belt rails also being able to be positioned one above the

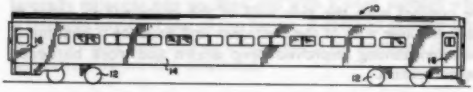
other on the side walls, the portions of the belt rails at the ends of the car carrying crossmembers which act as reinforcements for the end wall.

3,774,553
RAILWAY PASSENGER VEHICLE SIDE PLATE CONSTRUCTION
Robert J. Kunst, Chicago; Thomas J. O'Neill, Evergreen Park, both of Ill., and Norman M. Szala, Hammond, Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Nov. 1, 1971, Ser. No. 194,215
Int. Cl. B61d 17/08
U.S. Cl. 105—401 10 Claims



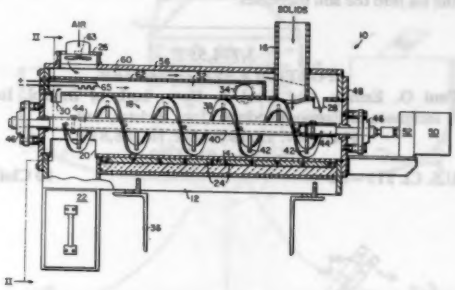
A side plate assembly including an extruded side plate member forming the top portion of the side wall unit and including flange portions receiving the roof assembly and also including integrally formed notched portions which receive reinforcing plate members to thereby form a rigid corner section at the junction of the side wall and roof units.

3,774,554
RAILWAY PASSENGER VEHICLE UNDERFRAME CONSTRUCTION
Thomas O'Neill, Evergreen Park, Ill., and Norman M. Szala, Hammond, Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Dec. 13, 1971, Ser. No. 207,186
Int. Cl. B61f 1/02
U.S. Cl. 105—413 9 Claims



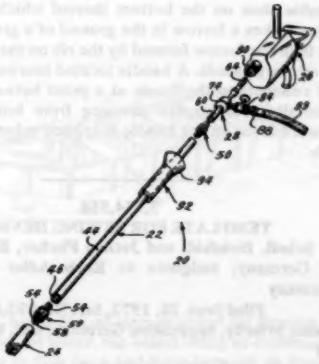
A multiple section center sill construction including a deep section structurally heavy draft sill unit and a shallower center sill member joined to the deeper draft sill to form a continuous sill unit extending the length of the passenger vehicle. A transition connecting plate means and seam reinforcing splicing plates are used to join the draft sill to the center sill to produce a draft sill and center sill wherein the cross section sizes correspond to the force requirements thereby lowering the weight of a vehicle by having sill members accurately sized and joined to resist the applied loads.

3,774,555
COMPACT INCINERATOR
Abner B. Turner, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 31, 1972, Ser. No. 221,991
Int. Cl. F23g 5/12
U.S. Cl. 110—8 R 5 Claims



A compact incinerator including a longitudinally extending furnace having a solids inlet and residue outlet, and heaters disposed around the furnace peripheral surface. A conveyor located inside the furnace moves solid matter from the inlet along the furnace length and the heaters simultaneously cause conbustion of solids during such movement prior to discharge as ash through the outlet. Preheated 0air supplied to the furnace aids combustion and carries away volatile gases generated during the combustion process. To assure complete burning of all gases, the gases and air are circulated through an afterburner mounted on the furnace prior to discharge to the atmosphere.

3,774,556
PROCESS AND APPARATUS FOR INTRODUCING LIQUIDS INTO SOIL
Elmer J. Poll, 4901 Tyrolean Ave., St. Louis, Mo.
Filed July 2, 1971, Ser. No. 159,417
Int. Cl. A01c 23/02
U.S. Cl. 111—7.2 5 Claims



Toxic liquids are introduced into soil for exterminating subterranean termites therein by drilling a hole through the soil with a rotating drill bit at the end of a pipe and introducing the liquid into the soil at the bit as the hole is drilled. The liquid is transferred to the drill bit through the pipe, the trailing end of

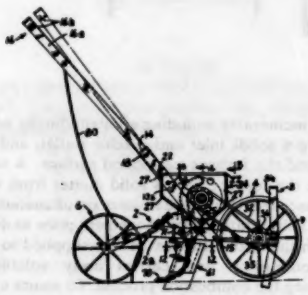
which is connected to the drive shaft of an adapter. A manually held drill is engaged with the trailing end of the drive shaft for rotating the same, and this rotary motion is transmitted to the pipe and bit. The adapter also includes a stationary bushing which rotates relative to the drive shaft so that the liquid can be pumped into and through the drive shaft to the pipe interior. The pipe is composed of sections, and therefore additional sections may be added as the penetration of the bit into the soil increases.

3,774,557

PORTABLE SEED PLANTER

Paul O. Esmay, and Carl B. Derr, both of Bristol, Ind., assignors to Esmay Products, Inc., Bristol, Ind.

Filed Nov. 12, 1970, Ser. No. 88,817
Int. Cl. A01c *5/00*
U.S. Cl. 111—82 **10 Claims**



A portable hand-pushable seed planter including a single front wheel and a single rear wheel carried on the base portion of a frame, the front wheel having a peripheral rib extending radially therefrom which, when the planter is manually propelled, pushes relatively deeply into the ground to form a furrow for relatively small seeds. Extending upwardly from the base portion of the frame are side frame members between which a seed hopper is supported. The seed hopper has means for sequentially delivering seeds to a seed discharge opening where the seeds drop by force of gravity into a seed discharge tube which drops the seeds into a furrow formed by the rib on the front wheel. The seed discharge tube carries a vertically adjustable shoe on the bottom thereof which in its lowered position makes a furrow in the ground of a greater width and depth than the furrow formed by the rib on the front wheel for relatively large seeds. A handle located rearwardly of the rear wheel connects to the frame at a point between and spaced horizontally a substantial distance from both wheels so a downward force on the handle is applied substantially to both wheels.

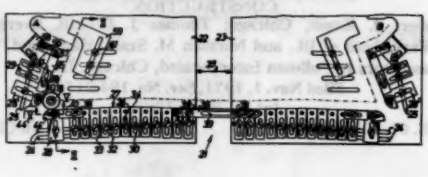
3,774,558

TEMPLATE FOR SEWING DEVICES

Hans Scholl, Bielefeld, and Jochen Fischer, Brackwede, both of Germany, assignors to Koch Adler AG, Bielefeld, Germany

Filed Sept. 28, 1972, Ser. No. 292,893
Claims priority, application Germany, Oct. 8, 1971, P 21 50 197.3
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **8 Claims**

An adjustable template for use in a sewing device for sewing workpieces of different shapes and sizes. The template comprises a supporting plate consisting of two essentially symmetric halves displaceable against one another. A plurality of segments each having an oblong hole and a bearing surface, is slidably secured in slotted holes formed in the supporting plate halves in a longitudinal and angular direction for aligning said bearing surface of said segments according to the required course of the seam. Two of the plurality of segments forming the internal corners of the template, are provided with means



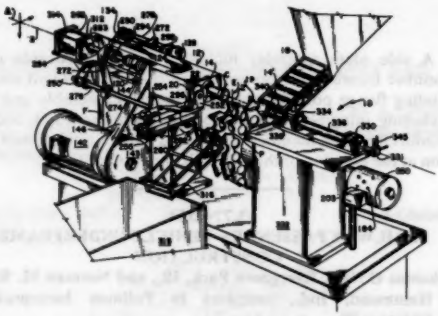
for moving template follower means out of the internal corners into a new path after entering the corners. A sewing device is also disclosed, which is provided with such an adjustable template.

3,774,559

CONTAINER FORMING METHOD AND APPARATUS

Frederick T. Kindelvich, Orinda, and Robert K. Richter, Walnut Creek, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Int. Cl. B21d *51/26*
U.S. Cl. 113—1 G **40 Claims**



Improved method and apparatus for moving a previously work hardened metal container past a rotatable wheel element and while said wheel element is moved into and out of selective contact with the side wall of the container in order to shape the side wall of the container and produce a final metal container having improved deep drawn and work hardened characteristics.

3,774,560

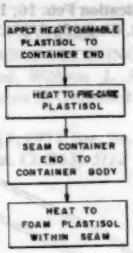
METHOD OF SEALING CONTAINER SEAMS

Thomas Jayes Hartz, Downers Grove, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Aug. 12, 1971, Ser. No. 171,126
Int. Cl. B21d *51/30*
U.S. Cl. 113—120 Y **8 Claims**

A method of forming a tight seal of a container end to a container body characterized by applying a heat foamable seam sealing compound, such as a heat foamable plastisol, to an

end, seaming the end to the body so that the foamable seam sealing compound will be within the seam and heating the seam to cause foaming of the seam sealing compound within


APPLY HEAT FOAMABLE PLASTISOL TO CONTAINER END
HEAT TO PRE-CURE PLASTISOL
SEAM CONTAINER END TO CONTAINER BODY
HEAT TO FOAM PLASTISOL WITHIN SEAM

the seam to the constraints of the seam. The improvement in a container double seam of a mechanically undeformed foamed sealing compound, such as a foamed plastisol.

3,774,561

ARTICLE OF MANUFACTURE AND MANUFACTURING OF SUCH ARTICLE

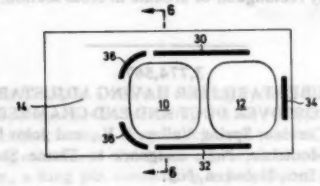
Werner R. Herbold, Oberderdingen, Germany, assignor to Blance & Co., Oberderdingen, Germany

Filed Nov. 19, 1971, Ser. No. 200,128

Claims priority, application Germany, Nov. 21, 1970, P 20 57 339.1

Int. Cl. B21d *51/18*

U.S. Cl. 113—120 B **6 Claims**



A sink unit is deep-drawn from a one-piece seamless stainless steel sheet, being provided with two basins which are laterally adjacent one another and with a work surface which is laterally adjacent one of the basins. A method of deep-drawing such a sink unit, and an arrangement for engaging it during deep-drawing are also disclosed.

3,774,562

360° ROTARY ANCHORING SYSTEM WITH DIFFERENTIAL DRIVE CAPABILITY

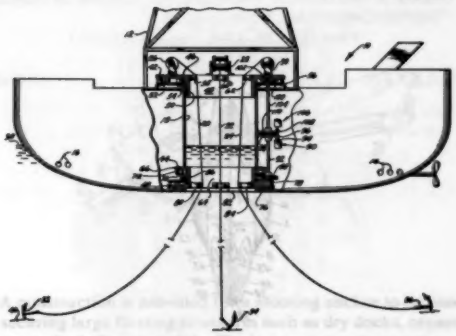
James T. Dean, III, Long Beach, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Filed June 12, 1972, Ser. No. 261,911

Int. Cl. B63b *35/00*

U.S. Cl. 114—0.5 D **8 Claims**

A mooring system for a vessel has two independently drivable positioning bases in the form of rings. An upper of these rings carries the mooring chain winches and is disposed at the upper end of a moonpool in the vessel. The lower of the rings is at the bottom of the moonpool and carries fairleads for the anchor chains. Small positional changes of, say, one or two degrees required in the heading of a moored ship are accom-



modated by rotation of the vessel with respect to the bottom ring. Larger heading changes require the use of the ship's positioning system in conjunction with the upper and lower positioning rings which are then synchronized together.

3,774,563

BARGE-LIKE OIL STORAGE VESSEL

Lloyd E. Anderson, Sr., Des Moines, Iowa, and Richard E. Hills, Coraopolis, Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Mar. 16, 1971, Ser. No. 124,665

Int. Cl. B63b *25/08*

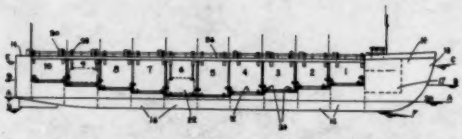
U.S. Cl. 114—0.5 T **19 Claims**

An elongate, barge-like oil storage vessel for floating at the surface of a body of water, the vessel being so constructed as to enable water to flow back and forth between an interior of the vessel and the body of water as material to be stored is added to and removed from said vessel, buoyancy means carried by said vessel and of such size and buoyancy as to float said vessel at the surface of the body of water, and mooring means connected to said elongate vessel and enabling said vessel to move in response to changes in wind and currents and the like.

3,774,564
OCEANOGRAPHIC VEHICLE AND PLATFORM
Lewis A. Bondon, 90 Yantacaw Brook Rd., Upper Mountclair, and Bruce B. Haselman, 71 Burki Pl., Freehold, both of N.J.
Continuation of Ser. No. 531,197, March 2, 1966. This application July 25, 1967, Ser. No. 659,837
Int. Cl. B63b *35/00*
U.S. Cl. 114—16 R 2 Claims

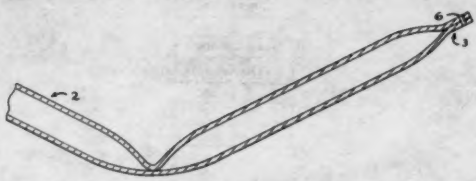
A surface and submersible oceanographic vehicle having an opposed paraboloidal hull configuration suitable for buoy and towing applications and capable of controlled excursions in response to surface vessel commands while under tow.

3,774,565
LIGHTER CARRYING MARINE VESSEL
Hector V. Paxos, 2728 Valentine Ct., New Orleans, La.
Filed July 10, 1972, Ser. No. 270,408
Int. Cl. B63b *35/42*
U.S. Cl. 114—43.5 2 Claims



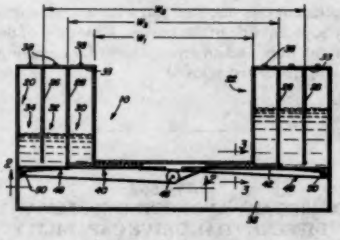
A marine vessel having a stepped cargo deck for selective float loading and unloading lighters. The open sided cargo deck is stepped upward in a plurality of steps from amidships to both ends of the vessel for receiving a lighter on each step. A supporting hull is compartmented into a plurality of trimming tanks and pumps provide power for pumping water into and out of the trimming tanks for trimming the vessel. The vertical distance of each step from adjacent steps is coordinated with a selective trim of the vessel to provide a lighter floating depth of water over each of said steps as selected and in any sequence. Thus by merely changing the vessel's trim, lighters may be float loaded and unloaded singly and in any order.

3,774,566
LIGHT-WEIGHT, CRASH-RESISTANT, VEHICULAR STRUCTURE
Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.
Continuation-in-part of Ser. No. 34,795, May 5, 1970, Pat. No. 3,716,953. This application Feb. 16, 1973, Ser. No. 333,153
Int. Cl. B63b *3/00*, *5/00*
U.S. Cl. 114—65 R 30 Claims



A vehicle, usable in water, air, space or on land, having substantially rigid interior structure and exterior, stiffly resilient shock-taking outer-wall structure that is capable of sustaining minor shocks of normal travel without flexing and of yielding under major shocks and then returning to its former shape. The shock-taking structure comprises elongated, inflated tubular members having flat ends and between these ends a plurality of inflated links comprising dense, flexible material capable of flexing a multiplicity of times without fracture. Preferably this material comprises resilient or ductile metal — preferably an envelope of fabric, lined with thin lead. The tubular-member links are integrally connected by joints which may be flat and optionally sealed, but preferably are only partly flattened toward the interior structure. The vehicle may be a boat, having: floats that comprise some of the tubular-member links; upper, boat-stabilizing balloons; and an air propeller or propellers. The rigid interior structure may be substantially rectangular or arcuate in cross section, stave-like panels.

3,774,567
U-TUBE STABILIZER HAVING ADJUSTABLE CROSSOVER DUCT AND END CHAMBERS
Ralph A. Corvino, Spring Valley, N.Y., and John P. Martin, Upper Montclair, N.J., assignors to Flume Stabilization Systems, Inc., Hoboken, N.J.
Filed Nov. 26, 1971, Ser. No. 202,497
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 8 Claims



A passive U-tube stabilizing tank adjustable in frequency for matching the natural frequency of the tank to the natural roll frequency of an associated vessel. The stabilizing tank is filled to a predetermined level with stabilizing liquid, above the level of the crossover duct. The effective length of the crossover duct, and the effective length of the respective end chambers

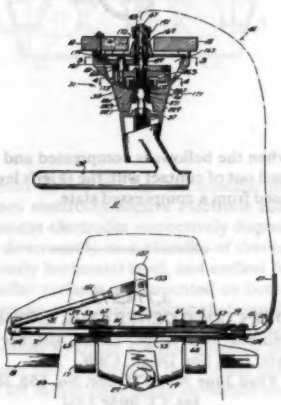
are variable by means of horizontally oriented gate valves cooperating with a plurality of vertical plates located in the end chambers. The natural frequency of the tank is varied by moving the gate valves with respect to the vertical plates.

3,774,568

ROTARY CABLE STEERING SYSTEM

Gaylord M. Borst, and William J. Shimanckas, both of Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 17, 1972, Ser. No. 244,682
Int. Cl. B63h *5/12*
U.S. Cl. 114—144 R 16 Claims



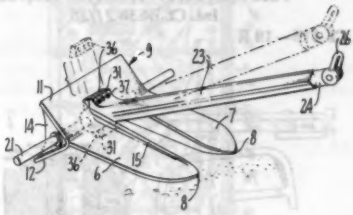
Disclosed herein is a marine steering system comprising a marine propulsion device including a hollow tilt pin connecting a swivel bracket to a boat attachment bracket to provide for swinging movement of the swivel bracket about the axis of the tilt pin, a king pin connecting a propulsion unit to the swivel bracket for swinging movement about a steering axis transverse to the tilt pin axis, a rotary member extending, at least in part, in the hollow tilt pin and operatively connected to the propulsion unit for swinging the propulsion unit about the steering axis in response to rotation of the rotary member, a steering device comprising a housing adapted to be attached to the boat hull at a location spaced from the marine propulsion device, a steering wheel rotatably mounted on the housing, and an output member rotatably mounted on the housing and drivingly connected to the steering wheel, and a flexible cable including an outer sheath connected to the housing and to the marine propulsion device and an inner rotary element connected to the steering device output member and to the rotary member in the hollow tilt pin to thereby cause rotary movement of the rotary member in response to rotation of the steering wheel and thereby to swing the propulsion unit about the steering axis. The rotary member in the tilt pin includes a threaded portion and there is located coaxially within the tilt pin a second member including a nut engaged with the threaded portion, and a linkage connecting the second member to the propulsion unit for preventing swinging movement of the second member about the tilt pin axis independently of the propulsion unit and for swinging the propulsion unit about the steering axis in response to movement of the second member axially of the tilt pin incident to rotation of the rotary member.

3,774,569

ANCHOR

Charles D. Linnenbank, Media, Pa., assignor to Boldt Corporation, Chester, Pa.

Filed Oct. 26, 1971, Ser. No. 191,986
Int. Cl. B63b *21/44*
U.S. Cl. 114—2[illegible] R 1 Claim



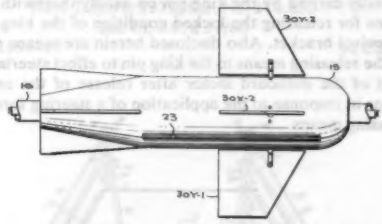
A construction is provided for a mooring anchor to be used in securing large floating structures such as dry docks, cranes, large work platforms, and the like in a permanent or semi-permanent position. Further, in accordance with this invention, the anchor structure permits a modification of the fluke angle (the angle between the plane of the flukes and the plane of the shank) to the end that the anchor is suited for use in either a sand bottom or a mud bottom. It has been found that the best fluke angle for sand is 35° while that for a mud bottom is 50°. In addition, the anchor structure is quite rugged so that it will withstand successfully the force necessary to retrieve the anchor even though it has been embedded in bottom for a long period.

3,774,570

NON-ROTATING DEPTH CONTROLLER PARAVANE FOR SEISMIC CABLES

Raymond H. Pearson, Richardson, Tex., assignor to Whitehall Electronics, Richardson, Tex.

Filed Jan. 25, 1972, Ser. No. 220,592
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B 13 Claims



A non-rotating depth controller paravane for seismic cable streamers wherein the paravane includes a body having a central bore extending the length thereof through which the seismic cable extends with the paravane latched in non-rotatable relation to the seismic cable. The paravane includes three or more pivotally mounted diving planes, four being shown in the illustrated example, and electronic circuitry and servo means for sensing differences between a command signal and a depth indicating signal derived from a pressure transducer on the paravane and activating the servo system to position the diving planes to cause the paravane to climb or dive regardless of its orientation about the roll axis and without movement of the paravane in yaw. Gravity sensing poten-

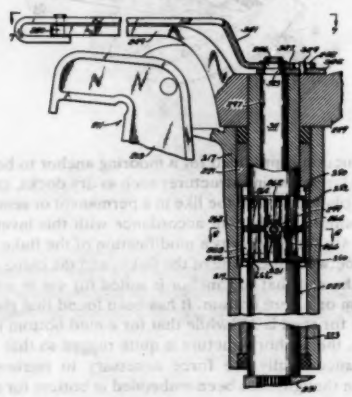
tiometers vary the control signals to the servo system to activate the diving planes in this manner regardless of the orientation of the paravane about the roll axis.

3,774,571

OUTBOARD MOTOR STEERING ARRANGEMENT

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 18, 1971, Ser. No. 125,763
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 R 16 Claims



Disclosed herein is an outboard motor having releasable means engageable between a king pin and a swivel bracket for preventing relative pivotal movement between the king pin and the swivel bracket. In one embodiment, the releasable means includes a wrap spring. In another embodiment, the releasable means includes a series of rollers movable relative to a locking position wherein said rollers engage both the swivel bracket and the king pin to prevent relative movement therebetween. Also disclosed herein are means for releasing the means preventing relative pivotal movement between the swivel bracket and the king pin including a shaft which is pivotally carried by the king pin co-axially therewith and has means for releasing the locked condition of the king pin and the swivel bracket. Also disclosed herein are means connecting the releasing means to the king pin to effect steering movement of the outboard motor after release of the releasable means in response to the application of a steering force to the releasing means.

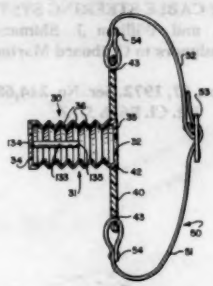
3,774,572

SNOW SKIING TRAINING AID

Robert Borraccio, 7720 Stenton Ave., Philadelphia, Pa.

Filed June 21, 1972, Ser. No. 264,710
Int. Cl. G08b *3/00*
U.S. Cl. 116—67 R 10 Claims

A device for use in snow skiing instruction to communicate to the skier that the correct "legs together" position is not being maintained. The device provides a sensory signal, audible or tactile, to the skier, on movement of the skier's legs away from each other. A first embodiment includes an accordian pleated cylinder or bellows capable of generating a sound when it is compressed or released from a compressed state, a support plate mounted to the cylinder, and a strap connected to the support plate for mounting the entire device to the inside of one leg of the skier. A second embodiment includes an accordian pleated cylinder or bellows having a rod mounted therein for movement towards and into contact with the skier's leg when the bellows is compressed and for movement away from and out of contact with the skier's leg when the bellows is released from a compressed state.

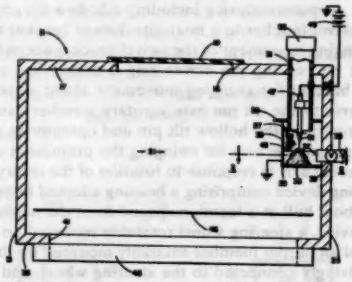


3,774,573

POWDER CLOUD GENERATOR AND METHOD

Sidney E. Hindell, San Diego, Calif., assignor to Diagnastic Instruments, Inc., San Diego, Calif.

Filed June 30, 1971, Ser. No. 158,289
Int. Cl. B05c *5/02*
U.S. Cl. 118—629 2 Claims



A powder cloud generator utilized for the development of electrostatic latent images on a receptor and having a chamber with an opening therein to receive the receptor. A selected amount of developer powder is delivered to a specific location within the chamber followed by directing a stream of gas against the powder whereby the powder particles are dispersed and a powder cloud is thereby formed in the chamber. Additionally, means may be provided for electrostatically charging the powder particles with a charge of a desired polarity.

3,774,574

DEVELOPMENT DEVICE FOR ELECTROPHOTOGRAPHY

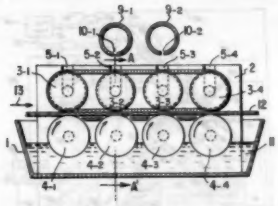
Masamichi Sato, and Isoji Takahashi, both of Asaki, Japan, assignors to Fugi Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 10, 1971, Ser. No. 206,036

Claims priority, application Japan, Dec. 10, 1970, 45/109876

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 5 Claims



A development device for the electrostatic photography, which comprises electroconductive electrode rollers operating as development electrodes respectively disposed movably upwardly and downwardly on a plurality of driving rollers arranged on a nearly horizontal level, and endless belt protruding from the roller surfaces and mounted on both ends of the electrode rollers so as to carry electrophotographic material held between the endless belt and driving rollers, wherein plates are provided to shield a space between the electrode rollers in contact and adjacent to the endless belt, and comprising means for supplying a liquid developer over the electrode rollers.

3,774,575

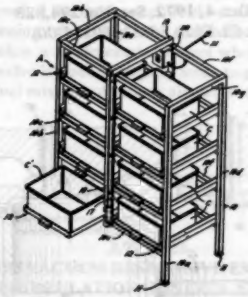
AQUARIUM

Carol M. Patterson, P.O. Box 1151, Bryan, Tex.

Filed July 26, 1972, Ser. No. 275,315

Int. Cl. A01k *64/00*

U.S. Cl. 119—5 5 Claims



An aquarium unit including a frame, a tray having an aquarium compartment thereon being mounted with the frame for slidable movement and positioning means for maintaining the tray and aquarium compartment substantially horizontally even when pulled outwardly of the frame.

3,774,576

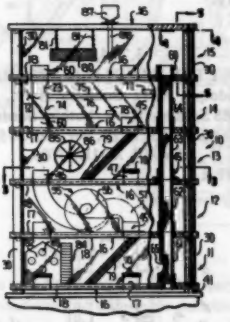
ANIMAL, BIRD OR LIKE CAGE

Charles T. Moore, 447 Highland Ave., Chambersburg, Pa.

Filed Aug. 23, 1971, Ser. No. 174,042

Int. Cl. A01k *01/00, 31/00*

U.S. Cl. 119—17 22 Claims



This disclosure relates to an animal cage which is rapidly assembled or disassembled without the use of fasteners or tools, and includes a plurality of floor panels in superimposed relationship defining between each pair a chamber with associated side and end panels, aligned apertures at corners of the floor panels, a plurality of posts interconnected to each other through the apertures, the posts each including a pair of channels which snugly receive one or more immovable panels and at least one movable panel (one or all of which may be transparent), and the movable panel being in alignment with a slot opening through each floor panel whereby access to any of the chambers is readily accessible by simply sliding one or more of the movable panels through the associated floor panel slots. The cage further includes openings through which animals may pass and rim means projecting above each opening for preventing debris from falling therethrough.

3,774,577

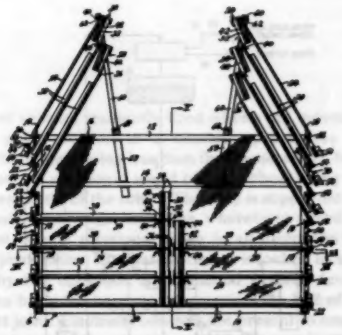
POULTRY ENCLOSURE

Dickerson H. Sanders, 170 Stanton Way, Athens, Ga.

Filed July 31, 1972, Ser. No. 276,653

Int. Cl. A01k *31/00*

U.S. Cl. 119—17 16 Claims



A poultry enclosure for live poultry consisting of an open frame in which are pivoted one or more series of vertically

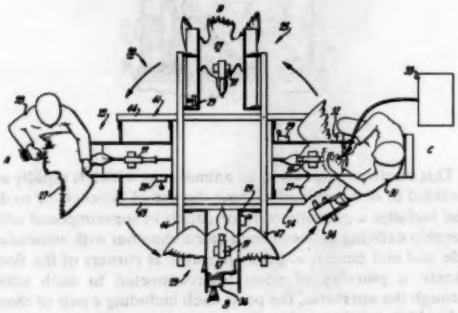
spaced apart trays for poultry, each tray being pivotally movable from a horizontal position to a tilted position in which poultry slides or tumbles from the lower edge thereof, each tray having peripheral side walls to assist in confining poultry thereon, and each higher tray serving as a cover for the next lower tray to complete the confinement, the side wall at the edge of the tray which is lowermost when the tray is tilted being automatically released when the tray is tilted to permit egress of poultry.

3,774,578

POULTRY HANDLING APPARATUS

Arthur J. Randolph, 4711 Sonoma Hwy., and Albertus G. Horsting, 6685 Sonoma Hwy., both of Santa Rosa, Calif.

Filed Dec. 15, 1972, Ser. No. 315,421
Int. Cl. A01k *37/00*
U.S. Cl. 119—97 R **19 Claims**



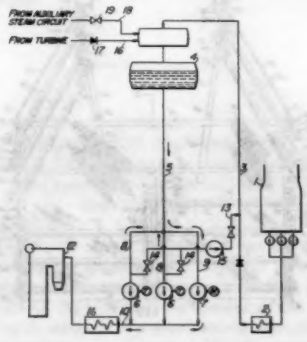
A power operated apparatus for gripping and transferring birds, such as turkeys and other poultry, between successive stations for facilitating operations thereon such as vaccination and artificial insemination. Provision is made for gripping or holding the birds in relatively normal position, particularly for insemination and for automatically releasing the birds at an exit station.

3,774,579

METHOD AND APPARATUS FOR RESTARTING BOILER FEED-WATER PUMP SYSTEM

Akira Sakai, and Tsugutomo Teranishi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1972, Ser. No. 225,806
Claims priority, application Japan, Feb. 17, 1971, 46/6807
Int. Cl. F22d *7/00*
U.S. Cl. 122—1 C **10 Claims**



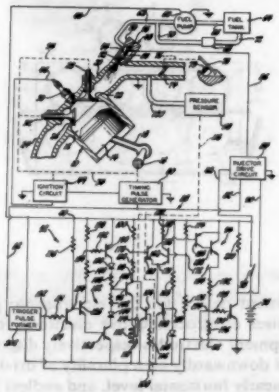
For a steam turbine plant including an air separator disposed in a feed-water heating cycle, there are provided a method and apparatus for restarting the plant so that the stable and reliable operations of the feed-water pump can be ensured.

3,774,580

LINEARIZED ELECTRONIC FUEL INJECTION SYSTEM

John P. McGavic, Lake Park, Fla., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1971, Ser. No. 191,183
Int. Cl. F02d *5/02*; F02m *51/00*
U.S. Cl. 123—32 EA **6 Claims**



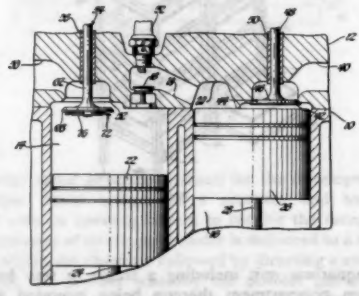
In synchronization with the speed of an internal combustion engine, a control voltage having a substantially constant amplitude is applied across an inductor to develop through the inductor a control current having a linearly varying magnitude. The inductance of the inductor is determined as a linear function of at least one engine operating parameter thereby to define the constant rate of change in the magnitude of the control current. Fuel is applied to the engine in an amount directly related to the rate of change in the magnitude of the control current so that the total quantity of fuel delivered to the engine is linearly related to the engine operating parameter.

3,774,581

COMBINATION POPPET AND REED VALVE

John H. Lundy, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1972, Ser. No. 294,823
Int. Cl. F02b *33/22*; F01l *3/00*
U.S. Cl. 123—70 R **3 Claims**



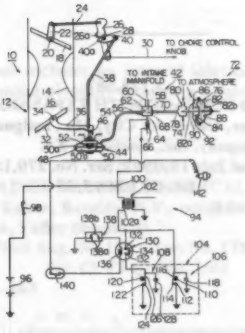
A combination poppet and reed valve consisting of a poppet valve with a flat-type head having a plurality of inlet apertures therethrough normally closed by a reed valve element.

3,774,582

IDLING SPEED CONTROL SYSTEM FOR AN AUTOMOTIVE GASOLINE POWERED INTERNAL COMBUSTION ENGINE

Kenji Masaki, and Hiroyuki Maruoka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Nov. 9, 1972, Ser. No. 305,041
Claims priority, application Japan, Nov. 25, 1971, 46/94677
Int. Cl. F02d 9/00
U.S. Cl. 123—103 R 5 Claims



An idling speed control system for an automotive gasoline powered internal combustion engine which system is adapted to vary the opening condition of a carburetor throttle valve in dependence on the variations in the atmospheric pressure. The idling speed control system includes a throttle opening device which is actuated by intake manifold vacuum for opening slightly the carburetor throttle valve during idling operation of the engine, a solenoid control valve for controlling the supply of intake manifold vacuum to the throttle opening device, and a vacuum level control device which is associated with the solenoid control valve and which is arranged to increase the level of the intake manifold vacuum supplied to the throttle opening device when the atmospheric pressure decreases below a predetermined level whereby the carburetor throttle valve is opened slightly more to provide the engine with an air-fuel mixture of proper air-fuel ratio.

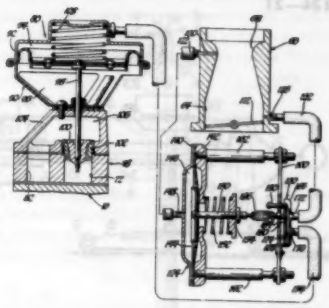
3,774,583

VENTURI VACUUM RESPONSIVE EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Jack B. King, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 8, 1972, Ser. No. 250,985
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A 2 Claims

An exhaust gas recirculation control system wherein a vacuum motor responsive to carburetor venturi vacuum varies the loading on a valve controlling air bleed to a vacuum operated servo unit which positions an exhaust gas recirculation control valve so as to provide a recirculation rate proportional to venturi vacuum and engine air consumption.

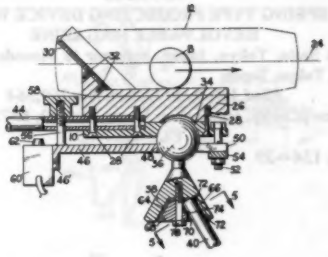


3,774,584

COACTING WHEEL TYPE BALL PROJECTING DEVICE

John K. Paulson, 14390 S. W. Uplands Dr., Oswego, Oreg.

Filed Feb. 14, 1972, Ser. No. 225,790
Int. Cl. F41b 3/00
U.S. Cl. 124—1 3 Claims



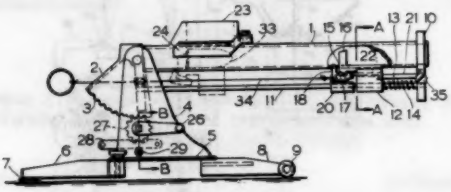
A pair of spaced, resiliently tired wheels are mounted on a base for axial rotation in a common plane, the spacing between the wheels being less than the diameter of a ball to be thrown and the rotational speed of each wheel being adjustable independently of the other. The base is supported above a ball and socket universal mounting, whereby to afford angular adjustment of said rotational plane in all directions about a common pivot point. The base member is locked in a desired position by the operation of a manual control device that operates to bring the base member against the ball of the ball and socket joint. Electrical controls are present to control the speed of rotation of the coacting wheels. These adjustments of relative rotational speeds and plane of rotation of the wheels afford wide variations in the direction, type, velocity and curvature of a ball ejected from between the wheels.

3,774,585

ELASTIC BAND PROJECTILE PROJECTING DEVICE

Robert A. Boyd, 1974 Seward St., Detroit, Mich.

Filed Apr. 6, 1972, Ser. No. 241,500
Int. Cl. F41b 7/00
U.S. Cl. 124—21 1 Claim



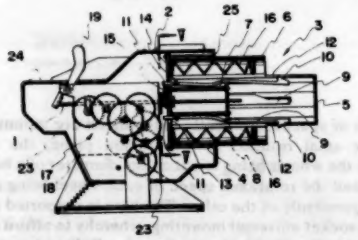
A projectile projecting gun having a gear arrangement for changing the elevation of the gun barrel. Below the barrel of the gun there are two slidable structures that ride on a track. The forwardmost structure is the unit that receives and propels a projectile. The rearmost structure pulls the forwardmost structure to a projectile receiving position, where, after receiving a projectile, a pivoted portion of the rearmost structure is pivoted so as to release the forwardmost structure so that the latter stucture may propel the projectile. The rearmost structure is pulled along forwardly with the forwardmost structure by a common elastic band, the band furnishing the force necessary to project an object. The rearward movement of the forwardmost structure causes an arm to be cammed away so that one projectile may be positioned in the barrel for firing. The barrel of the gun may be locked in a desired position. After the barrel has been locked in a desired position a separate safety lock may be used to releasably hold the above mentioned lock for the barrel.

3,774,586

SPRING TYPE PROJECTING DEVICE WITH REVOLVABLE MAGAZINE

Shigeru Saito, Tokyo, Japan, assignor to Masudaya Toy Co., Ltd., Tokyo, Japan

Filed July 7, 1972, Ser. No. 269,564
Claims priority, application Japan, Oct. 12, 1971, 46/93877
Int. Cl. F41b 7/00
U.S. Cl. 124—29 4 Claims



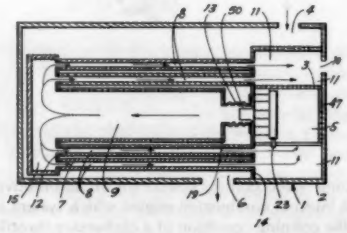
A toy successive missile launcher having a launching device and a transmission device. The launching device has a hollow complex cylindrical body having plural launching tubes, a circular disk, and supports for a plurality of launching levers and a rotatable shaft. The transmission device has a frame provided with a member, a reduction gearing, a changing lever and a motor. The launching device is connected with the transmission device by the rotatable shaft which is mounted on said frame. The cylindrical body is attached to the circumference of said disk and contains said lever support and said launching levers inside it. The transmission device is caused to operate by a motor. The transmission device causes the launching device, with the in place missiles, to rotate. As the launching levers rotate they engage the fixed cam on the frame and are caused to pivot out of engagement with the in place missiles. A compressed spring in each launching tube will project a missile once the launching lever has been pivoted from engagement with the missile. A new missile may be positioned for firing by placing it in the launching tube while compressing the compression spring. An elastic band is used to bias each launching lever so that once the missile is in place in the launching tube the forward end of the launching lever will engage a ring on the missile and hold the missile until the launching lever is pivoted out of engagement with the missile.

3,774,587

GAS FIRED FURNACE WITH EXPANSION MEANS

Paul A. Mutchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed July 10, 1972, Ser. No. 270,156
Int. Cl. F24h 3/08
U.S. Cl. 126—110 R 2 Claims



A gas-fired furnace including a heat exchanger mounted in a housing in heat transfer relation with flowing air passing over the heat transfer surface of the heat exchanger and a gas burner assembly including flame directing means; the heat exchanger having a centrally disposed burner tube communicating with a rear tube sheet at one end and the gas burner assembly at the opposite end; and, a plurality of return tubes disposed about the burner tube and affixed to the rear tube sheet at one end and a flue gas collector at the opposite end.

3,774,588

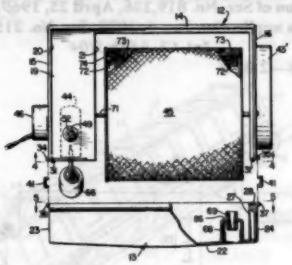
HUMIDIFIERS

Richard J. Yeagle, Drive-Hartland, Mich., assignor to Skuttle Manufacturing Company, Milford, Mich.

Filed June 28, 1971, Ser. No. 157,368
Int. Cl. F24f 3/14
U.S. Cl. 126—113 8 Claims

A humidifier assembly comprises a two part housing with a lower housing member being a water reservoir pan attached along opposite ends by projecting lips and slidable clamp strips to an inverted U-shaped upper housing member that may be reversed side for side for different air flow direction

connections. The upper housing member supports all of the moving parts including the motor, rotor and float valve. The



float valve unit includes an integral inlet conduit, discharge nozzle and shroud pivotally mounting a valve seat controlled by the float.

3,774,589

SELF CONTAINED ELECTROCHEMICAL HEAT SOURCE

Frederick P. Kober, Bayside, N.Y., assignor to Chem-E-Watt Corporation, Valley Stream, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,846
Int. Cl. F24j *1/04, 3/04*
U.S. Cl. 126—263 10 Claims

An electrochemical heat source is described wherein an electrochemical cell is provided with an electrical shorting member which is connected to the anode and cathode electrodes of the cell to enable the electric energy of the cell to be dissipated as heat. A safe non-toxic electrochemical heater for hair waving, hot compresses and similar uses is described wherein an anode in the form of a foil of aluminum or aluminum alloys is spaced by a non-conductive separator from an air depolarized activated carbon electrode. An electrolyte of a solution of table salt is employed to activate the heater. Various configurations and sandwich structures are described.

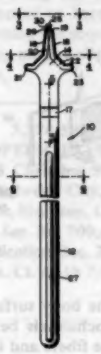
3,774,590

UTERINE SPECIMEN COLLECTING METHOD

Bernard McDonald, 18212 Pacific Coast Hwy., Malibu, Calif.

Continuation-in-part of Ser. No. 24,535, April 1, 1970, Pat. No. 3,633,565. This application June 22, 1971, Ser. No. 155,513
Int. Cl. A61b *19/00*
U.S. Cl. 128—2 B 2 Claims

A specimen collecting method comprises an elongate clinical instrument comprises a blade and handle for collecting cells and tissues from body cavities, particularly for the detection of squamous carcinoma of the cervix. Two slanted spaced-apart edges on the blade tip describe a conical path during manual rotation in situ and gather specimens in troughs



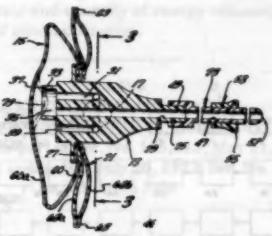
adjoining the edges. The blade tip is manually separable from the handle for forwarding to a pathology laboratory.

3,774,591

CATHETERIZATION ASSEMBLY

John Alphonso S. Corbin, Duarte; Joseph M. Schumann, Redondo Beach; D. E. Watson, and Paul J. Stayboldt, both of Torrance, all of Calif., assignors to Trionics, Inc., Torrance, Calif.

Filed Mar. 6, 1972, Ser. No. 231,930
Int. Cl. A61b *19/00*
U.S. Cl. 128—2 F 6 Claims



A catheterization assembly comprising a first container, a catheter, a first conduit leading from the catheter to the first container, a second container, and a second conduit interconnecting the two containers. The flow of urine from the catheter into the respective containers is controllable by an easily operable valve.

3,774,592

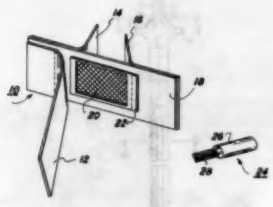
METHOD FOR PROVIDING AN IMPROVED BODY ELECTRODE ELECTRICAL CONNECTION

Roy J. Lahr, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1971, Ser. No. 208,586
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 E 3 Claims

Method and apparatus for providing an improved electrical connection between an electrode placed on the surface of the body and the underlying tissue. The electrode, including an

absorbent pad saturated with a conductive material, is adhesively affixed to the body surface. The elongated fibers of a brush are brought into contact with the absorbent pad and, with an appropriate amount of force applied to the brush, the



fibers micro-puncture the body surface, forcing the conductive material into microchannels beneath the body surface fomed or enlarged by the fibers and into contact with the underlying tissue.

3,774,593

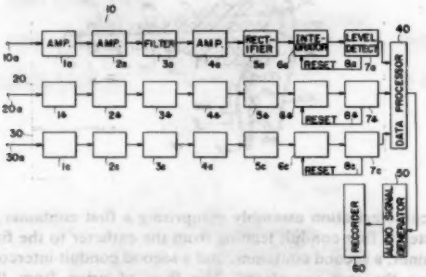
METHOD OF AND APPARATUS FOR SLEEP MONITORING BY BRAINWAVE, ELECTROMYOGRAPHIC AND EYE MOVEMENT SIGNALS

Hiroshi Hakata; Katumi Higuchi, both of Nara, and Masao Kozeni, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed Dec. 27, 1971, Ser. No. 212,340

Claims priority, application Japan, Dec. 29, 1970, 45/126284

U.S. Cl. 128—2.1 B **11 Claims**



An apparatus for monitoring the behavior during sleep of a living organism for measuring the mental condition of the living organism while the latter is sleeping, which essentially comprises an analog-to-digital signal conversion device for electroencephalograms, movements of the eyes and electromyograms, a data processor for processing the output signals from the conversion device and a tape recorder for recording the signals indicative of the electroencephalograms, the eye movements and the electromyograms. Also provided is a method of monitoring the behaviour during which can be performed by the apparatus herein proposed.

3,774,594

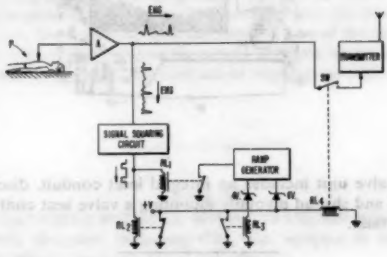
APPARATUS FOR TELEMETERING OF EKG SIGNALS FROM MOBILE STATIONS

Robert J. Huszar, Hartford, Conn., assignor to Pioneer Medical Systems, Inc., New Britain, Conn.

Continuation of Ser. No. 819,226, April 25, 1969, abandoned. This application Jan. 6, 1972, Ser. No. 215,890

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 R **6 Claims**



A system for the radio transmission of EKG signals to a hospital from an ambulance. After an initial limited transmission of EKG waves, no further signals are transmitted unless the EKG (R—R) rate departs significantly from the initial rate. The EKG signals modulate a voltage controlled oscillator. A code is associated with the transmission to identify patient, rescue vehicles and hospital.

3,774,595

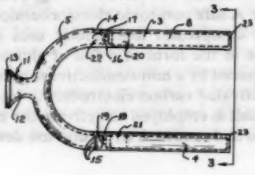
FORCED EXPIROMETER

Galen B. Cook, 1028 Marchelta Ln., Pebble Beach, Calif.

Filed July 13, 1971, Ser. No. 162,123

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **9 Claims**



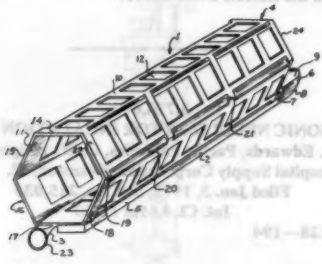
A forced expirometer has a U-shaped timing track with a rolling ball in it for timing an exhalation. Simple means are provided to compare the quantity of air exhaled during subsequent periods in the timing sequence. The ball, preferably in the form of a heavy steel ball bearing, rolls along the timing track and directs passage of exhaled air sequentially along branches of the U-shaped tube. The tube branches have a metering orifice and exhaust ports which divide the air volume in a pre-selected ratio. The air flowing through the metering orifice drives a light weight piston. A method of detecting constriction of human airways embodies, in a simple apparatus, means for converting an air volume to a linear measurement.

3,774,596

COMPLIABLE CAVITY SPECULUM

Galen B. Cook, 1028 Marchetta Ln., Pebble Beach, Calif.

Filed June 29, 1971, Ser. No. 157,825
Int. Cl. A61b 1/30, 1/32; A61m 29/00
U.S. Cl. 128—5 9 Claims



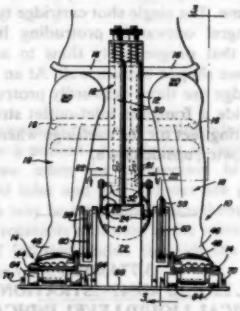
A device for the inspection of body cavities has collapsible walls. The walls are folded both during storage and during insertion into and retraction from the body cavity to be examined. After insertion, means are provided for unfolding the walls, thereby expanding the cavity, which permits access to the cavity for the purposes of inspection, diagnosis, or treatment. The walls are supported by axial rods running along the wall periphery. In the preferred embodiment, the walls are double layer plastic sealed to form a plurality of channels. The channels alternately are pressurized to expand the device during examination and depressurized to permit its contraction and withdrawal. The walls have a plurality of clear window-like areas which facilitate the examination procedure.

3,774,597

METHOD AND APPARATUS FOR SIMULATING THE ACT OF WALKING

Viotti E. Root, Cadis Stage Rd., Owego, N.Y.

Filed Feb. 14, 1972, Ser. No. 226,149
Int. Cl. A61h 1/02
U.S. Cl. 128—25 B 19 Claims



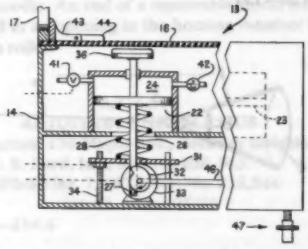
A method and apparatus for simulating the act of walking by holding a knee substantially stationary while sequentially elevating a heel of a foot associated with the knee, depressing the unsupported arch, and flexing the toes. The foot is moved during the sequential operations in a direction parallel to a line through the toes and heel thereof, and is raised so that the arch returns to its normal position and returned to its original position following the sequential operations. Apparatus for carrying out the method has a pair of spaced members for engaging a leg and controlling the movement of the knee thereof, and a plate adapted to receive the foot associated with the knee for performing the sequential operations. Cams are provided for imparting motion to the plate for carrying out the sequential operations.

3,774,598

ORTHOPEDIC EXERCISER

Donald R. Wilson, 2018 Christina St., Stockton, Calif., and William L. Morgan, Redwood City, Calif., assignors to said Wilson, by said Morgan, Stockton, Calif.

Continuation-in-part of Ser. No. 700,490, Jan. 25, 1968, Pat. No. 3,548,811. This application Dec. 21, 1970, Ser. No. 99,843
Int. Cl. A61h 7/00
U.S. Cl. 128—52 7 Claims



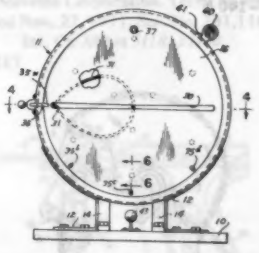
A device for applying successive blows to joints of the human body and particularly the food for orthopedic purposes. The device has spring driven reciprocating pistons with control over the rate and quantity of energy released per blow and the rapidity of piston operation.

3,774,599

EYE EXERCISING APPARATUS

Robert E. Martin, 13305 Winterhaven, Dallas, Tex.

Continuation-in-part of Ser. No. 145,613, May 21, 1971, abandoned. This application July 20, 1972, Ser. No. 273,396
Int. Cl. A61h 5/00
U.S. Cl. 128—76.5 13 Claims



A circular disk including an elongated narrow slot or window is rotatably supported in a frame, in a generally vertical plane, with the disk being selectively rotatable to position the diametral window at any desired orientation. A mechanism is provided for producing a target which traverses the window at

the rear face of the disk so that the user, viewing the disk from its front face, will follow a reciprocating target. In one form, a second concentric disk having an oval pattern disposed on only one half of the disk is rotated relatively to produce the reciprocating target through the window. In another form an endless belt, having runs parallel to the elongated window, carries a target member back and forth across the window. A second target carried on the rotating member behind the window disk, is a rotating target member which is visible at the periphery of the window disk. For binocular convergence exercises, a third target is secured to the frame with a fourth target being connected to the third target in adjustable spaced relation on a connecting flexible cord.

3,774,600

GYNAECOLOGICAL SURGICAL DEVICE

Michel Cognat, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Oct. 27, 1971, Ser. No. 193,064
Claims priority, application France, Oct. 27, 1970, 7038735
Int. Cl. A61f *5/46*; A61m *29/00, 27/00*
U.S. Cl. 128—131 **12 Claims**

A gynaecological surgical device to avoid Fallopian tubes becoming blocked again during cicatrisation following a tuboplasty operation, such device comprising a hollow cone of a flexible sheet material and a cord firmly fixed to the apex of the cone. In use after performing a salpingostomy of the blocked portion of a patient's Fallopian tube, the device is placed with the apex extending into the cut end of the tube with the cord extending to the abdominal wall. The base edge of the cone is folded around the end of the tube and secured to the tube exterior to prevent blockage during cicatrisation of the tube. When this is completed, the device can be removed simply by pulling the cord.

3,774,601

FILTERS

Michael J. Langone, 841 Bordentown Rd., Bordentown, N.J.

Filed Aug. 27, 1971, Ser. No. 175,545
Int. Cl. A62b *23/06*
U.S. Cl. 128—140 N **1 Claim**

Respiratory filters for engagement across orifices of body organs have interior central body members of open mesh, and have multiple overlying layers of fabric filter media. The peripheral edges of the media layers are affixed about corresponding edges of the central body member by a bonding strip.

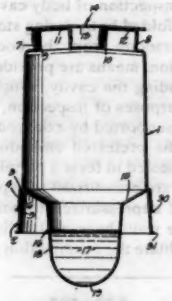
A nostril filter is provided in addition with a formed flexible outer sleeve to assist in positioning and retention in the nostril. The nostril filter similarly has layers of filter media material bonded to the flexible outer sleeve.

3,774,602

ULTRASONIC NEBULIZER FOR INHALATION THERAPY

Frank M. Edwards, Pacific Palisades, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 3, 1972, Ser. No. 215,035
Int. Cl. A61m *11/00*
U.S. Cl. 128—194 **19 Claims**



A disposable "single shot" ultrasonic nebulizer that includes a sealed thermoplastic shell encasing a measured unit dose of nebulizable liquid that occupies less than one half of the shell's volume. The single shot cartridge type nebulizer includes an integral outwardly protruding liquid collecting nebulizer cup that progressively thins to an ultrasonically transparent dome shaped bottom wall. At an opposite end of the shell cartridge are three outwardly protruding measuring cups that provide a frangible inlet-outlet structure and also provide supporting feet for the cartridge when the cartridge is stored, shipped, etc., upside down.

3,774,603

MEDICAL LIQUID ADMINISTRATION SET WITH OPTICAL LIQUID LEVEL INDICATOR

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

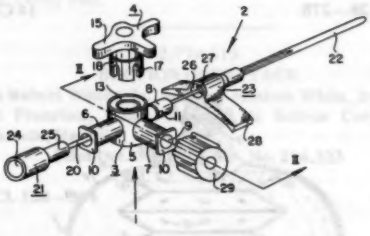
Filed Nov. 26, 1971, Ser. No. 202,243
Int. Cl. A61m *05/16*
U.S. Cl. 128—214 C **6 Claims**

A medical liquid administration set with an enlarged transparent measuring chamber that has two vertical opaque stripes on a rear half of the chamber and has volumetric calibrations on its front half. The transparent chamber wall,

opaque stripes, and a transparent liquid partially filling the chamber combine to create an optical illusion of a lateral off-

set in at least one of the stripes between air and liquid in the chamber. This provides an easy-to-read indicator of liquid level within the chamber.

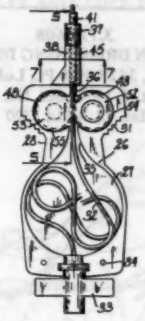
3,774,604
INFUSION CANNULA ASSEMBLY
Curt Aslov Danielsson, Handen, Sweden, assignor to Demeco Medical Products Aktiebolag, Strangnas, Sweden
Filed Jan. 28, 1971, Ser. No. 110,740
Int. Cl. A61m *05/00*
U.S. Cl. 128—214.4 **1 Claim**



An infusion cannula for intravenous introduction of medical compounds into a patient. A catheter is engaged in a valve body having two inlets for connection to infusion fluid sources. On said inlet and the catheter are positioned such that the cannula may be introduced therethrough. A valve tap is sealingly and rotatably mounted in the valve body to permit introduction of infusion fluids through the catheter from either inlet of the valve body.

3,774,605
CATHETER DEVICES
Warren R. Jewett, Orange, Conn., assignor to Medical Sciences International, Inc., Orange, Conn.
Filed Dec. 28, 1971, Ser. No. 212,972
Int. Cl. A61m *5/00, 25/00*
U.S. Cl. 128—214.4 **14 Claims**

A device for inserting a catheter into a mammalian body, comprising a housing member for storing a flexible catheter, a hollow needle connected to the catheter and supported on the housing member so as to form an extension of a side of the housing member, and at least one driven roller within said

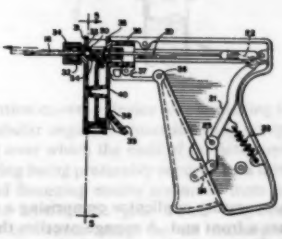


housing member for engaging and moving the catheter through the needle. An end of a removable shield for the needle is inserted in an opening in the housing member for rotating the driven roller.

3,774,606
ADJUSTABLE NEEDLE HUB
William J. Norton, 170 Maple Ave., Berkeley Heights, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Mar. 7, 1972, Ser. No. 232,546
Int. Cl. A61m *05/00*
U.S. Cl. 128—214.4 **2 Claims**

An intravenous needle and catheter (or cannula) combination wherein the needle passes through the catheter, when assembled for venipuncture, the needle hub being formed distally in a plurality of steps adapted to support Luer lugs on the catheter hub in different positions, permitting determination of the distance the needle bevel tip projects beyond the catheter tip.

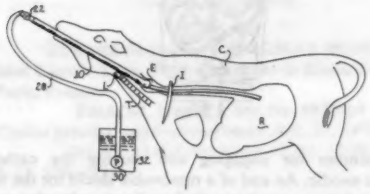
3,774,607
PELLET IMPLANT GUN
Frederick William Schmitz, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terra Haute, Ind.
Filed Nov. 22, 1971, Ser. No. 201,116
Int. Cl. A61m *5/18, 31/00*
U.S. Cl. 128—217 **2 Claims**



A pellet implant gun having a cartridge holder adapted to receive a cartridge having a plurality of pellets in pellet cavi-

ties thereof. Each pellet cavity can be aligned in turn with an injection needle and the pellet implant gun actuated to move the pellet through the needle into an animal into which the needle has been inserted.

3,774,608
RUMEN DRENCHING DEVICE
Wilson H. Wohler, Jr., 3528 49th Pl., Lubbock, Tex.
Filed Sept. 7, 1972, Ser. No. 287,084
Int. Cl. A61d *7/00*
U.S. Cl. 128—223 **16 Claims**

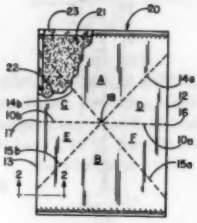


To drench a calf, a tubular esophageal speculum is inserted through the mouth of the calf into the esophagus. The speculum has a knob on the end which will enter the esophagus, but is larger than the larnyx so it will not enter the larynx and it also will not pass the thorasic inlet. With the esophageal speculum safely in the esophagus, a flexible tube in extended from the end of the speculum into the rumen and the fluid pumped therethrough, thus accomplishing the direct rumen drenching process.

3,774,609
SURGICAL PREPARATORY APPLICATOR
Gilbert Schwartzman, 20 Wilmot Cir., Scarsdale, N.Y.
Filed Jan. 31, 1972, Ser. No. 222,118
Int. Cl. A61m *35/00*
U.S. Cl. 128—269 **4 Claims**

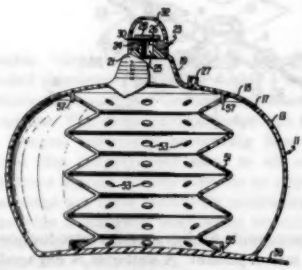
A surgical preparatory applicator comprising a sealed container which has a front end. A sponge overlies the front end and a generally U-shaped clip surrounds the sponge. Pins are provided on the clip in the sponge for perforating the container through the sponge for permitting the contents of the container to flow onto the sponge.

3,774,610
PREFOLDED DISPOSABLE DIAPER
John C. Eckert, and Kenneth M. Enloe, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jan. 3, 1972, Ser. No. 215,038
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **9 Claims**



A disposable diaper of substantially rectangular configuration folded in half transversely across its major length dimension, and having selected portions of the diaper which would ordinarily fall along the transverse mid-line on either side of a longitudinal centerline tucked into the interior of the diaper to form a centrally disposed substantially triangular pocket. The pocket is maintained by adhesively attaching together interior surface areas which are in face-to-face contact in the tucked-in portions.

3,774,611
STABILIZED CONTAMINATION FREE SURGICAL EVACUATOR
Jimmy D. Tussey, Rt. 3, Box 7, and George W. Oakes, Rt. 3, Box 49, both of South Boston, Va.
Filed June 8, 1972, Ser. No. 261,029
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 **14 Claims**



A contamination free surgical evacuator that includes a fluid stabilizer is disclosed. The evacuator container is bulbous in shape and formed of a material that has memory, i.e., tends to return to a "normal" configuration when external forces are released. A pair of input drip chambers and valves, one or both of which may be used to drain fluids from a wound, allow drained fluids to enter the evacuator container. A magnetic output or purge valve mounted in a graduated cup-like region, allows the evacuator container to be initially evacuated and allows drained fluids to be removed from the container thereafter. The graduations allow the evacuator to be used as a "rate of drainage" measuring instrument. The fluid stabilizer is in essence a compressible, perforated diaphragm mounted inside of the bulbous evacuator container. The fluid stabilizer

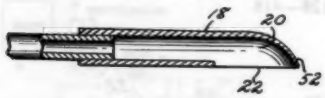
prevents drained fluids from splashing around in the evacuator container, yet it does not inhibit the operation of the evacuator. Moreover, the fluid stabilizer prevents any sudden surge of fluids from accidentally actuating the magnetic purge valve.

3,774,612

UTERINE EVACUATION ASSEMBLY

John L. Marco, 601 Dow Ave., Oakhurst, N.J.

Filed June 14, 1971, Ser. No. 152,579
Int. Cl. A61b 17/22; A61m 1/00; B65d 25/18
U.S. Cl. 128—304 7 Claims



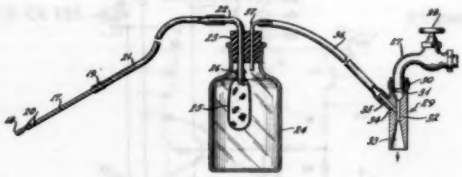
A disposable uterine evacuation assembly for applying aspiration curettage to the uterine cavity wall. A hollow transparent plastic cannula is connected by a flexible plastic tube to a receptacle which is in turn connected to a vacuum source for applying vacuum pressure to an inlet slot in the tip portion of the cannula. The receptacle consists of a pair of nested transparent plastic bags, the inner bag being perforated to trap solids therein while permitting liquids to flow into the outer bag. The cannula has a rigid handle section and a flexible intermediate section which permits bending to conform to the curves of the cervical canal, and the slot in the cannula tip is arranged parallel to the longitudinal axis of the cannula and has flattened edges to provide flush engagement against the uterine cavity wall.

3,774,613

SUCTION CURETTAGE

James Robert Woods, Jr., and Roy Matison White, Jr., both of San Francisco, Calif., assignors to Scitron Corporation, Honolulu, Hawaii

Filed Dec. 30, 1971, Ser. No. 214,323
Int. Cl. A61b 17/22
U.S. Cl. 128—304 4 Claims



Apparatus and method for the safe and rapid vacuum evacuation of the female uterus in an abortion procedure which can be performed in substantially any location having a supply of fluid flowing under pressure as the power source. The apparatus includes a thin hollow flexible catheter of a size to permit the operation to be performed without the necessity of dilating the cervix either mechanically or by the use of medicines.

3,774,614

SURGICAL HEMOSTATIC LIGHT

Galen B. Cook, 1028 Marchetta Lane, Pebble Beach, Calif.

Filed June 29, 1971, Ser. No. 157,824
Int. Cl. A61b 17/12, 1/06
U.S. Cl. 128—325 4 Claims

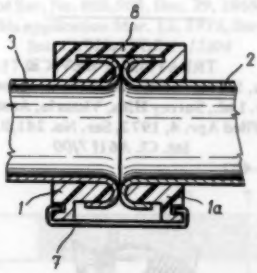
A surgical device provides sterile compression of the capillary blood vessels about the periphery of an operating area. The device is a circular or elliptical ring with an outwardly extending arm adapted to receive an illumination source. The ring is rigid and preferably transparent. The under-surface of the ring compresses a narrow zone of skin about the operating area. The illumination source functions both to illuminate the operating area and as a handle for the device.

3,774,615

DEVICE FOR CONNECTING OR JOINING THE ENDS OF INTERRUPTED TUBULAR ORGANS IN SURGICAL OPERATIONS WITHOUT STITCHING

Drahoslav Lim; Ladislav Sprincl, and Jindrich Kopecek, all of Prague, Czechoslovakia, assignors to Ceskoslovenska Akadmie Ved, Prague, Czechoslovakia

Filed Feb. 8, 1971, Ser. No. 113,195
Int. Cl. A61b 17/11
U.S. Cl. 128—334 C 2 Claims



This invention covers a device for connecting the ends of interrupted tubular organs without stitching comprising a connecting ring over which the ends of the interrupted organ are pulled, the ring being preferably secured by a fastening means. The ring and fastening means are made from inert material, preferably a hydrophilic gel, which may be swollen to equilibrium or which may be an incompletely swollen hydrogel which is subjected to additional swelling at the place of application. The place of application. The connecting ring may be provided with a groove and may be placed into a ring-shaped fastening means and held therein by fitting the fasten-

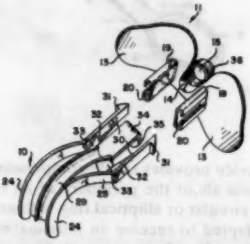
ing means in the groove or simply held in place by a thread. Two connecting rings may also be used and held together by means of a coupling member made

3,774,616

ENDOTRACHEAL TUBE HOLDER AND AIRWAY

Norman S. White, Pittsburgh, Pa., and Alfred Zangrilli, deceased, late of Pittsburgh, Pa. (by Mary Zangrilli, executrix), assignors to Perry Plastics, Inc., Erie, Pa.

Filed Feb. 1, 1972, Ser. No. 222,546
Int. Cl. A61m 25/02
U.S. Cl. 128—351 11 Claims



An airway and an endotracheal tube holder face plate are detachably connected to constitute a unitary assembly for insertion in the mouth of a patient. The inner face of the plate carries bite block means in telescoping engagement with resilient biased detents carried by the airway and engageable against the outer face of the plate to prevent its separation from the airway until the detents are released by manual pressure. Latching means on the outer face of the face plate is operative to engage an intubated endotracheal tube and hold it against axial movement in either direction. The face plate is provided with apertures through which the detents extend and through which suction catheters and other tubular conduits may be passed for intubation. The body of the face plate is provided with an upper edge opening recess for receiving an intubated endotracheal tube to which the face plate is applied in service.

3,774,617

TREATMENT DEVICE

Lorraine Lisle, Surrey Hills, Australia, assignor to Dolphis Industries Pty. Ltd., Surrey Hills, Victoria, Australia

Filed Apr. 4, 1972, Ser. No. 241,017
Int. Cl. A61f 7/00
U.S. Cl. 128—402 11 Claims

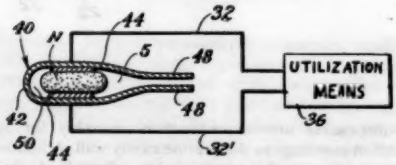
A treatment device for various treatments including the alleviation of pain through the application of heat and/or cold, which can be applied in the home. The device comprises a container of moulded rubber or flexible plastics material having a generally horseshoe or U-shaped configuration with a stopped opening to allow the supply and removal of treatment fluid to, and out of, the container. The container further includes various forms of fastening means for attaching the device around part of the body of the person being treated, and the fastening means may be provided by laces threaded through eyelets, belts and press-studs or any other convenient attachment means.

3,774,618

IMPLANTABLE NERVE STIMULATION ELECTRODE

Roger E. Avery, Melville, N.Y., assignor to Avery Laboratories, Inc., Farmingdale, N.Y.

Continuation of Ser. No. 46,085, June 15, 1970, abandoned.
This application July 3, 1972, Ser. No. 268,667
Int. Cl. A61n 1/04
U.S. Cl. 128—418 26 Claims



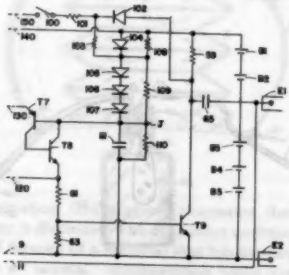
A relatively thin and flexible strip of inert plastic having electrodes and lead wires encapsulated therein is provided for implantation about a single nerve so that electrical stimuli may be applied thereto.

3,774,619

SOURCE TESTING CARDIAC PACER WITH SOURCE-INDEPENDENT RATE CIRCUITRY AND DISABLING MEANS THEREFOR

Herbert E. Goldberg, Concord, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jan. 10, 1972, Ser. No. 216,667
Int. Cl. D61n 1/36
U.S. Cl. 128—419 P 7 Claims



Externally controlled implantable cardiac pacer and heart testing apparatus. Apparatus is disclosed for use with an implantable heart-stimulating device to initiate a test mode for investigating several electro-medical areas including the implanted power source. In one test mode, induced continuous heart stimulation is provided at a stimulation rate dependent upon the level of the power source thus providing an indication of remaining life of the power source. This test mode also

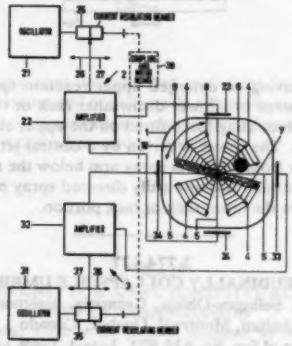
provides test-stimuli each of which has its energy reduced by a pre-determined amount to indicate degree of capture-margin available. One of the external controls disclosed causes another test mode in which all heart stimulation ceases and provides a physician with an opportunity to check the patient's heart and heart rate under non-stimulative conditions.

3,774,620

ELECTROMEDICINAL APPARATUS FOR INTERFERENCE CURRENT THERAPY

Achim Hansjurgens, Karlsruhe, Germany, assignor to Deutsche Nemectron Gesellschaft, M.B.H., Karlsruhe, Germany

Filed June 14, 1971, Ser. No. 152,596
Int. Cl. A61m *1/38*
U.S. Cl. 128—420 **10 Claims**



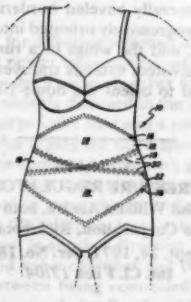
An electromedicinal apparatus for use in interference current therapy. The apparatus has at least two circuits which act on the patient through electrodes, the circuits producing a stimulation-active interference on a target area on the patient by superimposing the two or more currents which by themselves have no stimulating effect, the currents differing from each other by a low frequency value. A particular feature of the apparatus is that the circuits produce an optimum interference at the treatment area and include a current strength regulating member which can be set in operation during treatment.

3,774,621

SHIRRED GIRDLE

Dolores T. Dabe, New York, N.Y., assignor to Poirette Corsets, Inc., New York, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,341
Int. Cl. A41c *1/00*
U.S. Cl. 128—539 **3 Claims**



A garment of the girdle type is formed of material having the characteristic of stretchability in multiple directions. A double panel of the material is provided at control areas which overlie selected body regions, the panels being secured to one another. At least one strip of shirring is gathered in the double panel, and means is provided to secure the shirrs in the strip.

3,774,622

DEVICE, PARTICULARLY A CIGARETTE, FOR SMOKING A CORD OF SMOKABLE MATERIAL

Karl Heinz Steigerwald, Pringeneiche 15, Starnberg, Germany

Filed Nov. 16, 1971, Ser. No. 199,136
Int. Cl. A24d *01/02*; A24f *01/02, 05/04*
U.S. Cl. 131—9 **27 Claims**

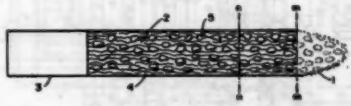
A cigarette has at least one longitudinal secondary air channel which is sealed towards the suction end of the cigarette and is in communication with the ambient air via a connection separated from the suction path of the smoke.

3,774,623

COMPOSITION FOR REMOVING POLYNUCLEAR AROMATIC HYDROCARBONS FROM BURNING TOBACCO GAS-SMOKE

Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estin; Leonard W. Cronkhite Jr., and William W. Wolback, Trustees of the Charles River Foundation

Division of Ser. No. 888,505, Dec. 29, 1969, Pat. No. 3,679,625. This application Mar. 13, 1972, Ser. No. 233,935
Int. Cl. A24b *15/02, 15/04*
U.S. Cl. 131—17 R **8 Claims**



Polynuclear Aromatic Hydrocarbons (PAH) can be absorbed and thereby removed from tobacco gas-smoke by polysiloxane compositions. The polysiloxane may be present in the tobacco to absorb the PAH at or near the combustion zone. Endothermic fillers in the polysiloxane and high polysiloxane to tobacco ratios are effective to reduce the combustion temperature and minimize desorption of previously absorbed PAH.

3,774,624

SMOKERS PIPE

Frederick A. Fassbender, Essex Fells, N.J., assignor to S. M. Frank & Co., Inc., New York, N.Y.

Filed June 27, 1972, Ser. No. 266,669
Int. Cl. A24f 13/06
U.S. Cl. 131—201 4 Claims

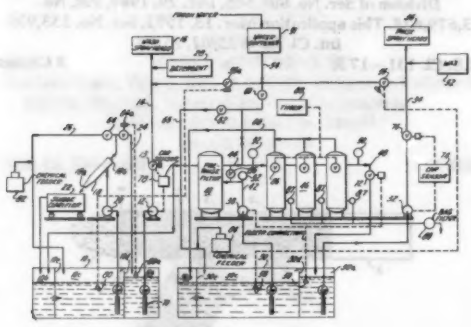
A smoking pipe having a bowl and stem; a smoke duct extending through the stem to the mouthpiece having a spiral spring therein providing a plurality of spaced projections extending from the duct walls to dissipate the heat of the smoke, flowing to the mouthpiece, collecting chambers being provided between the projections adjacent the duct wall. The downstream end of the stem terminates in a bowl supporting member having a chamber forming portion adapted to removably support a bowl thereon, the chamber having well having a filter therein and providing a trap for condensate. A portion of the stem is upset and extends upwardly into the well providing a dam to prevent the condensate from flowing from the trap into the stem duct and for retaining the spring in the stem duct.

3,774,625

CARWASH WATER RECLAIM SYSTEM

Dale E. Wiltrout, Paterson, N.J., assignor to Ultradynamics Corporation, Paterson, N.J.

Filed Feb. 9, 1972, Ser. No. 224,785
Int. Cl. B08b 3/10; B60s 3/04
U.S. Cl. 134—104 18 Claims



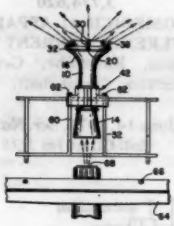
A recycle arrangement in which wash water containing grit and particles is collected and treated in a cyclone which removes the solid particles from the water, and disposes of the solids in the form of sludge. The treated water is reclaimed for subsequent washing purposes. After washing, the surface is rinsed with water collected and passed through filters after the rinsing to remove soap, detergents, and other impurities so as to produce clear reusable water. The resulting clear water is then reclaimed and recycled for subsequent rinsing purposes.

3,774,626

DISHWASHER WATER TOWER

Andrew N. Schweitzer, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Aug. 30, 1971, Ser. No. 175,939
Int. Cl. B08b 3/02
U.S. Cl. 134—179 3 Claims



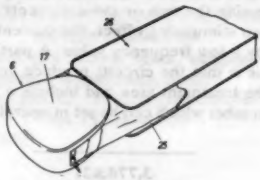
A tower having an enlarged upper reaction spray head is rotatably secured to a lower dishwasher rack or rack portion by a bearing mounting force fitted on the upper ends of vertical rack pins. The tower is driven by a central jet of washing fluid or water from a bottom spray arm below the rack to provide a substantially full upwardly directed spray pattern over the area above the lower rack or rack portion.

3,774,627

LONGITUDINALLY COLLAPSIBLE UMBRELLA

Heinz Seitel, Solingen-Ohligs, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Continuation of Ser. No. 829,971, June 3, 1969, abandoned.
This application May 20, 1971, Ser. No. 145,454
Int. Cl. A45b 9/02, 19/06
U.S. Cl. 135—20 3 Claims



A longitudinally collapsible umbrella forming a generally flat rectangular package when collapsed in which a fan-like handle (when viewed in side elevation) includes an upwardly opening receptacle having arcuate generally converging side edges including generally beveled bordering edges whereby dome rib tips are progressively oriented into opposed receptacles of the handle, and the wings of a runner, to which the stretcher ribs are pivoted, extends transversely of the handle receptacles and aid to orient the dome ribs from within the receptacle.

3,774,628

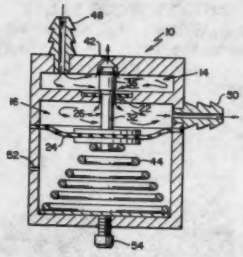
PRESSURE REGULATOR

David C. Norton, and William Ancira, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Sept. 24, 1971, Ser. No. 183,555
Int. Cl. F16k 17/04
U.S. Cl. 137—115 4 Claims

A pressure regulator for accurately regulating fluid pressure at extremely low levels, such as .300 psi, is disclosed. The pressure regulator accurately regulates fluid pressure above

an ambient or a reference pressure over a wide range of inlet supply pressures. The pressure regulator has a valve and piston design which is insensitive to the supply pressure. A



static pressure vent insures that variations in ambient or reference pressure will not adversely affect the operating pressure level. Adjustment means also permits fine tuning of the regulator to a desired operating level.

3,774,629

KICKDOWN UNIT FOR AN AUTOMOTIVE AUTOMATIC POWER TRANSMISSION

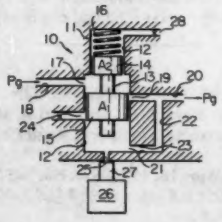
Koji Enomoto, Yokohama, Japan, assignor to Nissan Motor Company Limited, Kanagawa-ku, Yokohama, Japan

Filed Dec. 14, 1971, Ser. No. 207,759

Claims priority, application Japan, Dec. 18, 1970, 45/113222

Int. Cl. F16k *31/363*

U.S. Cl. 137—116.3 12 Claims



A kickdown unit for effecting a forced downshift in an automotive automatic power transmission, which kickdown unit comprises a valve body, a valve chamber formed in the valve body, a valve spool slidably disposed in the valve chamber and having a relatively large valve land and a relatively small valve land biasing means for urging the valve spool in one direction, inlet and outlet ports communicating with the valve chamber, a control pressure port communicating with the valve chamber at a position to cause the control pressure therein to continuously act on the relatively large valve land for thereby urging the valve spool in another direction, a drain port communicating with said valve chamber and the degree of communication therebetween being controlled by said relatively large valve land and a nozzle leading from the valve chamber, said nozzle being opened and closed for controlling the control pressure acting on the relatively large valve land.

3,774,630

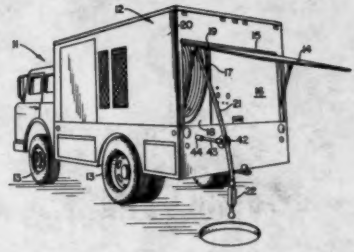
MOBILE SEWER OR LIKE CLEANING MACHINE

Charles J. Prange, Cridersville, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1971, Ser. No. 193,771

Int. Cl. B65h *75/40*

U.S. Cl. 137—355.12 6 Claims



A mobile sewer conduit cleaning machine has an isolated cleaning hose reel compartment enclosing a reel having a narrow large diameter drum on which the hose is randomly coiled, and a hose guide roller is centered on the body below the reel compartment.

3,774,631

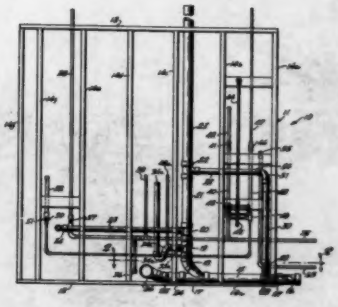
PREFABRICATED MODULAR ROUGH PLUMBING

Donald E. Willkins, 10520 S.W. 185th Ter., Miami, Fla.

Filed Feb. 9, 1972, Ser. No. 224,652

Int. Cl. F16l *5/00*

U.S. Cl. 137—357 7 Claims

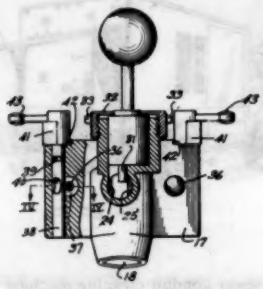


A prefabricated modular rough plumbing unit for use in residential building construction is described. The rough plumbing is incorporated in a section of interior wall framework that can readily be integrated with the framing carpentry during construction. Plumbing waste piping is so arranged as to permit direct connection with plumbing fixtures such as bathtubs and water closets installed at the same floor level as that of the modular wall section, thereby obviating any requirement for below the flooring waste or soil piping installation prior to installation of the modular unit.

3,774,632
SANITARY VALVE

Ronald J. Mrugala, Brooklyn Park, Minn., assignor to The Cornelius Company, Anaka, Minn.

Filed June 28, 1971, Ser. No. 157,097
Int. Cl. F16k *35/10, 43/00*
U.S. Cl. 137—315 5 Claims

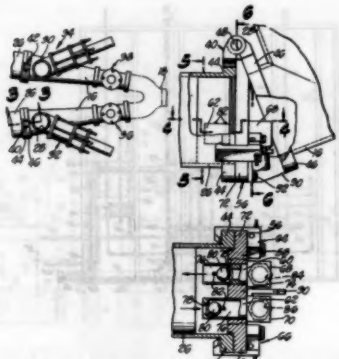


A dispensing system includes a valve element biased by fluid pressure against a valve seat, and a valve body having a dispensing outlet and a valve actuator which are manually detachable from that part of the system or sanitary valve which contains the valve seat without unseating of the valve. The valve has a stem which projects through the seat into the valve body, and a substitute valve body, provided with a keyed lock, prevents unauthorized unseating of the valve when the valve body is detached.

3,774,633
CLEAN OUT ASSEMBLY FOR A CONCRETE PUMP AND PIPELINE

Raymond E. Decker, Riverside, Calif., assignor to Challenge-Cook Bros., Incorporated, Industry, Calif.

Filed Oct. 25, 1972, Ser. No. 300,756
Int. Cl. F16k *17/26, 15/00;* B21d *53/00*
U.S. Cl. 137—493.8 10 Claims

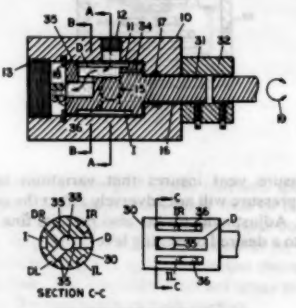


An assembly for use in cleaning out the pipeline used on ram cylinder type concrete pumps which is adapted to be positioned in the outlets of the pump, upstream of the pipeline valves and hopper valves which regulate the flow of concrete to and from the ram cylinders. The assembly contains a mounting base and a pair of one-way valves, carried by and oppositely aligned in the mounting base, allowing inlet fluid flow to the ram cylinders through one of the valves and outlet flow through the other valve. A hose communicates the inlet valve with a pressurized water supply and a second hose communicates the outlet valve with the concrete pipeline which is to be flushed out.

3,774,634
ROTARY SPOOL VALVE

Roland W. Bonney, Western Ave., Kennebunkport, Maine

Filed Mar. 1, 1972, Ser. No. 230,893
Int. Cl. F16k *11/00*
U.S. Cl. 137—596 11 Claims



A four-way valve, particularly useful for controlling the flow of fluid to and from a double-acting hydraulic cylinder, comprises a valve body bored to receive a spool rotatable therein. The valve body has an inlet port and two, right and left, operating ports facing into the side of the bore. The spool has longitudinal slots in its periphery, one inlet set of three slots for admitting fluid to and one discharge set of two or three slots, depending on whether the valve is a closed or open center design, for discharging fluid from the ports, which are made to register with the inlet and operating ports by rotating the spool to the right or left from a mid- or bypass position.

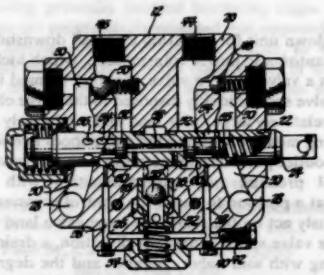
The three inlet slots are interconnected in a pressure-balanced Y-relationship so that displacing forces created by the pressure of the fluid in each slot is balanced.

The discharge slots are connected to a common conduit leading to a discharge port at the end of the valve body.

3,774,635
POWER TRANSMISSION

Robert G. Farrell, Royal Oak, and Carl R. Binkley, Warren, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed Apr. 18, 1972, Ser. No. 245,103
Int. Cl. F16k *13/00;* F16d *1/00*
U.S. Cl. 137—614.2 7 Claims



A directional valve for a hydraulic power system has a body adapted to be clamped into a bank of valves and has a spool

slidable within the body to direct fluid flow between a pressure fluid source and a hydraulic motor. The body includes auxiliary valves such as a load compensating flow regulator, a load-drop check valve, a cylinder port relief valve, and a cylinder port anti-cavitation valve and the spool includes one or more counterbalance valves. Load sensing passages in the body direct load pressure to the compensator valve and to the pressure source for controlling the volume of fluid delivered from the source. The body is designed for maximum symmetry with the spool bore near the middle of the iron mass to minimize distortions caused by aging of the iron by temperature differences and by the pressure force of the fluid.

3,774,636

SELF-SEALING COUPLING ASSEMBLY

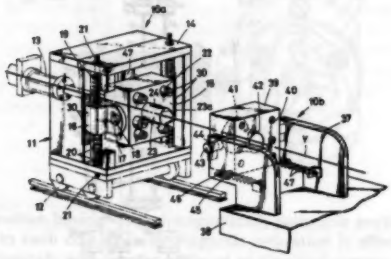
Teiji Arita, Yokohama, Japan, assignor to The Yokohama Rubber Co. Ltd., Tokyo, Japan

Filed Aug. 25, 1972, Ser. No. 283,710

Claims priority, application Japan, Aug. 27, 1971, 46/65172

Int. Cl. F16l *27/10, 37/00*

U.S. Cl. 137—614.04 **3 Claims**



A self-sealing coupling assembly is provided for absorbing misalignment between the male and female coupling members. The assembly comprises a reciprocally movable fluid feeding unit and a stationary fluid receiving unit operatively associated therewith, said feeding unit having a movable block, a male coupling holder rotatably and resiliently connected to said block and a plurality of male coupling members and guide prong both mounted on said male coupling holder, and said receiving unit having a stationary bed, a female coupling holder connected rotatably and resiliently to said stationary bed, a guide prong receiving aperture formed in said female coupling holder and a plurality of female coupling members mounted on said female coupling holder, the arrangement being that alignment correction is effected cooperatively by the male and female units.

3,774,637

DIAPHRAGM ACTUATED SPOOL VALVE

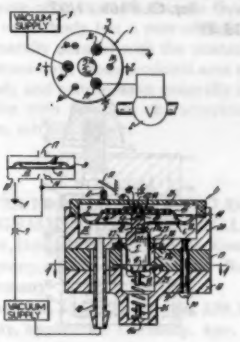
Urban A. Weber, and George J. Janu, both of Brookfield, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Aug. 30, 1972, Ser. No. 285,047

Int. Cl. F16k *11/00, 31/385*

U.S. Cl. 137—625.6 **11 Claims**

A three-way spool valve includes a cylindrical, spool mounted within a bore including a pair of flexible annular lip seals. The seals are spaced somewhat less than the axial length of the spool to provide "break-before-make" switching. A load is connected to the chamber between the seals. The spool is connected to a snap action diaphragm operator secured overlying the bore with a transfer chamber connected to a vacuum source. An input chamber is connected to a relay or non-relay fluid control for positioning of the diaphragm and attached spool. An orifice interconnects the input chamber to the transfer chamber and the effective diaphragm area is greater in the input chamber than the transfer chamber to bias the spool valve to an initial position. A spring of a relatively low force may also bias the spool to the initial position.



3,774,638

MULTICHANNEL SLIDE VALVE

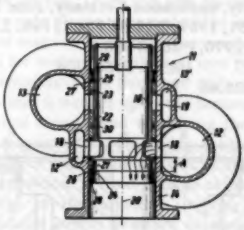
Walter Kriett, Hamburg, Germany, assignor to Blohm & Voss AG, Hamburg-Steinwerder, Germany

Filed Nov. 11, 1971, Ser. No. 197,803

Claims priority, application Germany, Dec. 18, 1970, P 20 62 394.3

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.48 **3 Claims**



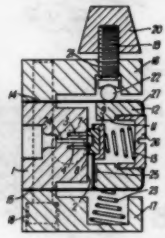
A multichannel slide valve whose valve casing has a bore forming a main channel in which an axially slidable sleeve valve is arranged for controlling flow openings in the wall of the casing which are in communication with two branch channels extending transversely to the main channel. The interior of the casing is provided with sealing rings of dovetail cross section arranged in correspondingly shaped dovetailed grooves which are spaced from the flow passages and engage the outer end portions of the sleeve valve, while a customary O-ring is arranged between the flow openings and engages the center portion of the sleeve valve.

3,774,639

VALVE

Roger Commarmot, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 9,320, Feb. 6, 1970, Pat. No. 3,678,236.
This application Feb. 4, 1972, Ser. No. 223,477
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.48 5 Claims



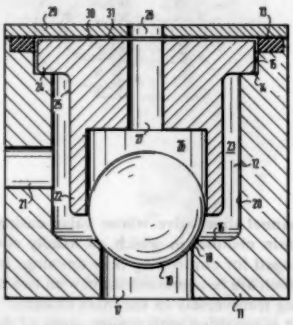
The valve for controlling the flow of a fluid, particularly very small flows, comprising a block having at least one smooth face and at least two ducts extending through the block and terminating in the smooth face in an orifice. A slide is guided for movement substantially parallel to the smooth face and is moved, e.g., by means of a screw or pneumatically. A valve element movable with the slide is urged into sliding contact with the smooth face and a recess in the valve element is dimensioned to overlie and connect at least two of the orifices in at least one position of the slide.

3,774,640

BALL VALVE

Helmut Hirn, Dusslingen/Wurtt., and Wolfgang Bott, Mossingen-Belsen, both of Germany, assignors to RILCO Maschinenfabrik GmbH & KG, Dusslingen/Wurtt., Germany

Continuation-in-part of Ser. No. 46,639, June 16, 1970, abandoned.
Filed Oct. 25, 1972, Ser. No. 300,464
Claims priority, application Germany, June 23, 1969, P 19 31 837.7; Oct. 31, 1969, P 19 54 994.1; Feb. 2, 1970, P 20 04 567.4; Feb. 24, 1970, P 20 08 580.7
Int. Cl. F15c *3/06*
U.S. Cl. 137—625.48 6 Claims



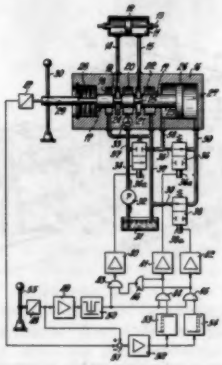
A ball valve in which a spherical valve member is guided toward and away from sealing engagement with a valve seat by a cylindrical sleeve insert of fractionally greater diameter. The insert floats radially and axially in the valve casing for automatic alignment with the seated valve member and for preventing leakage between the power circuit of the valve and its hydraulic control circuit in all operating conditions without need for resilient seals.

3,774,641

ELECTROHYDRAULIC CONTROL ARRANGEMENT FOR HYDRAULIC ACTUATORS

Reinhard Mindner, Grunenbergstrasse 8, Gutenberg; Karl-Heinz Adler, Hainbuchenweg 36, Leonberg; Heinz Flaschar, Eger Strasse 18, Asperg, and Klaus Schneider, Hindburgstrasse 77, Ludwigsburg, all of Germany

Filed Apr. 11, 1972, Ser. No. 239,396
Claims priority, application Germany, Mar. 26, 1971, P 21 14 639.4
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.64 17 Claims



A control arrangement for hydraulic actuators in which two hydraulic transmission lines communicating with the actuator are closed when the control slide of a control valve is in neutral position. Inlet and return lines communicate with the hydraulic transmission lines in alternate operative positions of the control slide. The control slide is actuated by a piston moving within a control cylinder. Working fluid is applied to the control cylinder through electromagnetically actuated valves. A remote control lever provides an adjustable input parameter through a transducer. The electromagnetically actuated valves are operated by a regulating amplifier as a function of the input parameter established by the remote control lever. Two flow lines communicate with the control cylinder and are connected to the inlet and return lines by two electromagnetically actuated valves. Threshold switching circuits are connected between the signal amplifiers used to energize the electromagnetically actuated valves and the regulating amplifier.

3,774,642

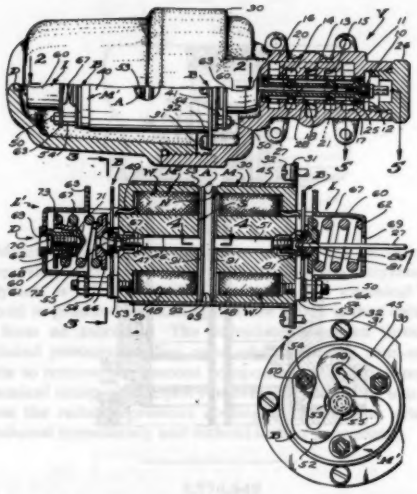
PUSH-PULL LINEAR MOTOR

Samuel A. Gray, 10201 Falun Dr., Sun Valley, Los Angeles, Calif.

Filed Aug. 14, 1972, Ser. No. 280,405
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.65 10 Claims

An electro-hydraulic servo valve means comprising a four-way spool-type valve and a push-pull type linear motor for

operating an axially shiftable valve member, said motor comprising a single armature arranged between a pair of spaced, axially aligned, opposing, energized field coils whereby the armature is magnetically biased at all times and subject to instant response to changes in variations in the flux field of said coils created by differentials in signal currents to said fields;



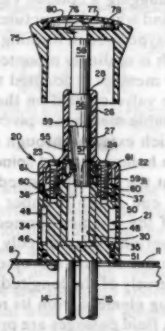
said armature having shaped magnetically saturable portions related to each coil whereby magnetic saturation is effected proportionately with respect to linear motion and current differentials; said motor including equal and oppositely disposed spring means at the opposite ends of the armature yieldingly maintaining the armature in a mean position between the coils.

3,774,643

PROPORTIONING VALVE

George S. Cole, Chicago, and Richard L. Ritzenthaler, Alden, both of Ill., assignor to George S. Cole, Chicago, Ill.; Cavour Hartley; H. B. Fryberger, Jr.; Alfred Hartley; Donald G. Ellison, as receiver for John O. Baker; Guilford Hartley, and Donald G. Ellison, all of Duluth, Minn.

Filed Mar. 9, 1972, Ser. No. 233,147
Int. Cl. F16k *19/00*
U.S. Cl. 137—636.4 8 Claims



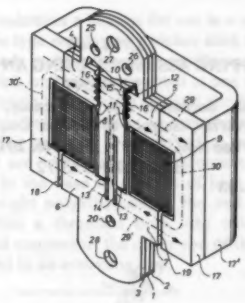
A proportioning valve of the single control type for two streams of fluid, such as hot and cold water, having a valve body including a removable cap, an elongated tapered control cam mounted in the valve body for longitudinal and rotational movement and a pair of generally U-shaped resilient tubes, one for each fluid stream, in the valve body, the cam engaging central portions of the tubes in pinching manner to close, open, vary the rate of and proportion the fluid flow through the tubes. The valve body has a pair of fluid inlet conduits close to and generally parallel with the control cam, thereby minimizing the transverse cross-sectional area of the body and enabling the body and cam to have generally in-line relation, providing a valve with compact characteristics suitable for lavatory, kitchen, tub and shower.

3,774,644

CONVERTER FOR CONVERTING ELECTRICAL SIGNALS INTO FLUID SIGNALS

Volkmar Leutner, Hemmingen, and Roman Romes, Friolzheim, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 27, 1972, Ser. No. 238,149
Claims priority, application Germany, Apr. 24, 1971, P 21 20 076.0
Int. Cl. F15c *3/10*
U.S. Cl. 137—831 20 Claims



A converter for converting electrical signals into fluid signals has a permanent magnet and a pair of soft iron pole pieces to form an air gap. Three soft iron plates are integrated with the soft iron pole pieces to complete the magnetic circuit of the permanent magnet. Each plate is provided with rectangular extensions for mating with the soft iron pole pieces, and an armature portion having a fixed end and an opposite free movable end. A coil is wound upon the armature portion for receiving electrical signals and modifying the strength and direction of the magnetic field created by the permanent magnet for urging the free end to move in one or another direction from the neutral position. A fluid passage extending along the axis of symmetry of the armature injects liquid passing therethrough under a supply pressure to a pair of receiving nozzles symmetrically oriented about said axis of symmetry for receiving more or less fluid from said armature in dependence on the position of the latter.

3,774,645

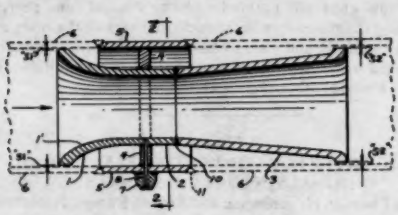
FLANGE-FREE VENTURI NOZZLE INSERT

Leonard A. Pompa, Stamford, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 6, 1971, Ser. No. 205,234
Int. Cl. F15d *1/02*
U.S. Cl. 138—44 4 Claims

A flange-free venturi element for use in producing differential pressure for measurement of fluid flow in a conduit which is adapted for welded insertion into a conduit. The insert also has special passageway means around each end of the inlet-outlet cone portions of the venturi and through a sup-

porting web to assist in balancing pressure differences during normal operation as well as during a possible "choke" or sonic



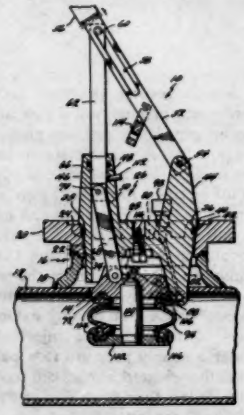
flow condition such that the wall thickness of the pressure recovery cone can be of somewhat lesser thickness than would otherwise be required.

3,774,646

LINE STOPPING ASSEMBLY USING AN INFLATABLE ELEMENT

John J. Smith, deceased, late of Decatur, Ill. (Beatrice A. Smith, executrix), assignor to Mueller Co., Decatur, Ill.

Filed Nov. 24, 1971, Ser. No. 201,845
Int. Cl. F16l 55/12
U.S. Cl. 138—93 8 Claims



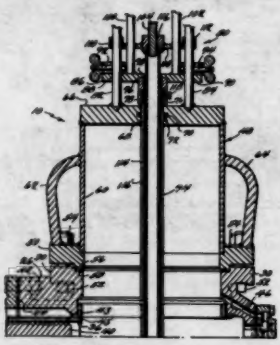
The disclosure embraces an apparatus for plugging a fluid conduit in which a lateral opening has been formed, the apparatus having a fitting adapted to be secured over the opening in the conduit and in which a carrier member is threadedly supported; a plug element having an inflatable member is pivotally attached to a support arm that projects through the opening in the conduit when the carrier member is installed in the fitting and a manually operable linkage arm is attached at one end to the plug element with the other end of the linkage arm extending through the carrier member exteriorly thereof; fluid passages are provided in the carrier member and plug element to permit supply of a gas under pressure to an exhaust from the inflatable member.

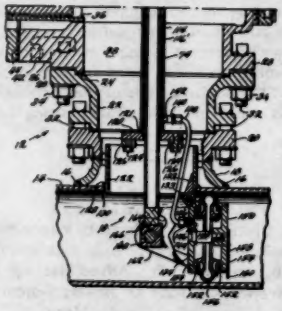
3,774,647

LINE STOPPING ASSEMBLY USING AN INFLATABLE ELEMENT

Narayan C. Saha, and Joseph Daghe, both of Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Nov. 4, 1971, Ser. No. 195,561
Int. Cl. F16l 55/10
U.S. Cl. 138—94 4 Claims





An apparatus for plugging a conduit carrying a fluid under pressure is provided and which is structured to cooperate with a valved fitting of the type used in forming a lateral opening in the conduit and which is sealingly mounted on the exterior of the conduit; a carrier member is adapted to be secured to the fitting above the gate valve carried on the fitting; a plug element having an inflatable member is pivotally attached to an elongated spindle which extends through a sealed opening in the carrier member; a hollow support spindle is carried on the carrier member about the first mentioned spindle and which supports at its lower end a hub member which engages and rests upon the rim of the opening formed by the cutter; the plug element on its periphery is hingedly attached to the interior of the hub member so that movement of the first mentioned spindle transversely of the longitudinal axis of the conduit will move the plug element from its retracted position to its operating position; fluid passages are provided on the carrier member, between the spindles and a flexible hose member to supply and exhaust a gas under pressure to and from the inflatable member.

3,774,648

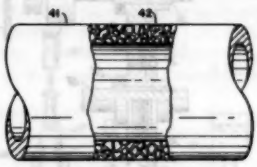
POROUS PLASTIC STRUCTURES HAVING APERTURES

Frank E. Edlin, Tempe, Ariz., assignor to International Plastics Inc., Calwich, Kan.

Division of Ser. No. 682,210, Nov. 13, 1967, Pat. No. 3,558,753. This application Sept. 25, 1970, Ser. No. 75,762

Int. Cl. B32b *3/12, 3/26, 5/18*

U.S. Cl. 138—177 4 Claims



Molding powder of a polymeric resin having intrinsic acid properties, such as acrylonitrile - butadiene - styrene terpolymer, is admixed with a decomposable chemical compound to produce a resulting mixture which is then extruded to form an extrudate. The extrudate is passed through a reduced pressure cooling zone while still in a semi-molten state to remove the gaseous components of the decomposed chemical compound. Upon removing the solidified extrudate from the reduced pressure cooling zone a porous article is produced immediately and without further processing.

3,774,649

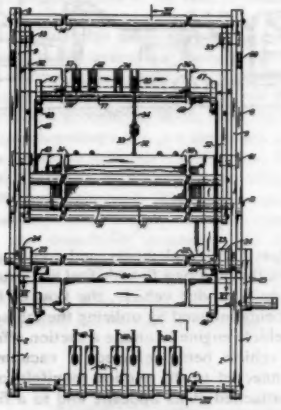
HAND LOOM

James Stoy Giessner, R.D. No. 1, Berlin, Pa.

Filed Aug. 21, 1972, Ser. No. 282,590

Int. Cl. D03d *29/00*

U.S. Cl. 139—33 11 Claims



A hand loom, on which four different types of weaving are possible, includes vertically movable harnesses, each guided by a cord extending around pulleys at the opposite ends of the bottom of the harness and then across itself and up around another pair of pulleys and sliding connections with the harness ends. The cords are anchored above and below the harnesses and keep them from tilting lengthwise. A beater normally hangs in front of the harnesses, but can be pivoted at the back of the loom and extend forward past them. The warp and cloth beams can be turned together by a belt and pulley arrangement, or turned separately with the belt slipping.

3,774,650

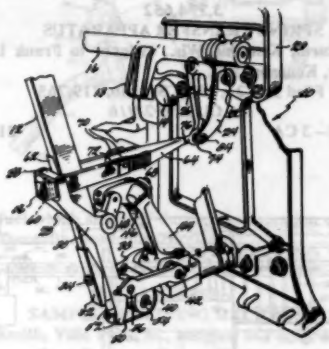
LOOM LINKAGE CONNECTOR

John B. Sherrill, Rt. 2; Paul E. Bruchon, Rt. 4 Box 495; James T. Phillips, Rt. 4 Box 477, all of Mount Holly, N.C., and John L. Currence, Jr., Rt. 1 Box 551, Mount Holly, N.C.

Filed Nov. 22, 1971, Ser. No. 200,864

Int. Cl. D03d *49/28, 49/40*

U.S. Cl. 139—151 1 Claim



The disclosure embraces a linkage for use in a textile weaving apparatus of the type employing a picker stick to position a yarn strand or strands in the course of a textile weaving operation. The picker stick is pivotally mounted at one end to move back and forth through an arc; intermediate the picker stick's ends, a strap is disposed thereabout to pull the stick through the arc and a spring member is employed to pull the stick through the same arc in the opposite direction; the strap's ends are secured to the base of a block of high density and high molecular weight polyethylene; in the end opposite its base, the block has a threaded bore into which is force screwed a threaded connector; the other end of the connector is pivotally attached to an actuating arm.

3,774,651

TERRY CLOTH TAKE-UP MOTION FOR WEAVING MACHINE

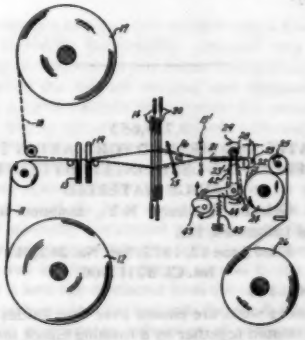
Josef Braun, Winterthur, and Eberhard Seifert, Sulz-Attikon, both of Switzerland, assignors to Sulzer Brothers, Ltd., Winterhaven, Switzerland

Filed Mar. 10, 1972, Ser. No. 233,483

Claims priority, application Switzerland, Mar. 17, 1971, 3921/71

Int. Cl. D03j *1/00*

U.S. Cl. 139—291 R 9 Claims



The weaving machine is provided with a means between the fell and the cloth draw-off roller for turning down or flattening

out the loops in the cloth. By turning down or flattening the loops, lateral creep of the cloth on the draw-off roll is prevented and thus any consequent creasing of the cloth on the beam is avoided.

3,774,652

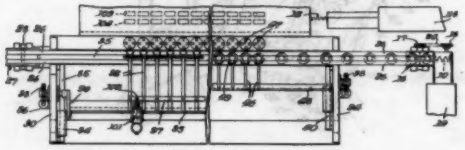
SPRING TRANSFER APPARATUS

Helmuth Sturm, Kenosha, Wis., assignor to Frank L. Wells Company, Kenosha, Wis.

Filed Jan. 21, 1972, Ser. No. 219,765

Int. Cl. B21f 27/16

U.S. Cl. 140—3 CA **21 Claims**



Conventional coil springs having a knot on both top and bottom convolutions are delivered to a rotating transfer drum of hexagonal shape having magnetized flat surfaces around which pass a pair of endless belts and which thus have movement with the transfer drum. The top run of each belt passes over and is supported by the magnetized top surface of a longitudinal table. The coil springs which are delivered to the transfer drum one at a time adhere to a flat surface thereof and are caused to move with the endless belts along the top surface of the table to form a longitudinal row. Solenoid actuated positioning pins provided along the length of the table are actuated in succession to stop a coil spring and hold the same in stopped position while the belts continue to move. Lower pusher arms are actuated to simultaneously push all the coils of a positioned row off the belts and onto turntables respectively which are in a lowered position for receiving the same. The turntables are thereupon elevated and rotated to rotate each coil in a selective direction to obtain the desired knot orientation in the completed mattress or other inner spring structure. A plurality of upper pusher arms are next actuated to push all the coils from off the elevated turntables and onto the dies of an assembling unit and which dies are open at the time for receiving the top and bottom convolutions of the coils respectively.

3,774,653

APPARATUS AND METHOD FOR MAKING TWISTED WIRE PRODUCTS USING INTERMITTENTLY FED FRINGE MATERIAL

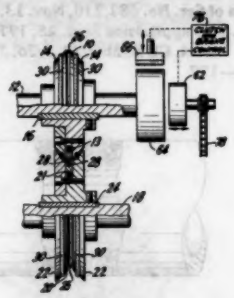
Joseph T. Gelardi, Yonkers, N.Y., assignor to American Technical Industries, Inc.

Filed June 12, 1972, Ser. No. 262,061

Int. Cl. B21f 7/00

U.S. Cl. 140—149 **14 Claims**

Two or more wires are passed over wire guides as they are pulled and twisted together by a rotating chuck mounted on a moving carriage. A strip of fringe material is fed between the wires to form bristles. The fringe material passes between two or more fringe material guides which intermittently hold the fringe material and break it to produce a length of twisted wires having segments of fringe material with gaps between



them held between the wires. The lengths of twisted wires are then cut at points located within the gaps to make, for example, branches for artificial trees or parts of brushes.

3,774,654

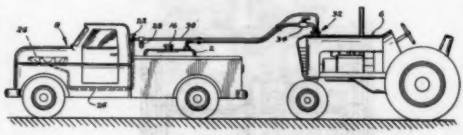
FUEL TRANSFER APPARATUS

Donald A. Hjermstad, P.O. Box 17, Florence, S. Dak.

Continuation-in-part of Ser. No. 827,542, May 26, 1969. This application Mar. 29, 1971, Ser. No. 128,705

Int. Cl. B65b 31/06

U.S. Cl. 141—42 **10 Claims**



Farm tractors, farm implements, and construction vehicles are refueled in the field by a flexible fuel line extending from a supply tank on a service vehicle, the flow of fuel from the supply tank being induced by utilizing the intake manifold of the service vehicle engine to create a suction effect in the fuel tank of the vehicle being refueled. A vacuum line is permanently connected to the suction manifold of the service vehicle and attached at its opposite end to a filler assembly which is removably coupled to the inlet fitting of the fuel tank being filled. Optional vertically adjustable means incorporated within the filler assembly serves to permit the full filling of a fuel tank regardless of the height of its inlet fitting.

The filler assembly itself, in the preferred embodiment, comprises a composite article including a unitary body of material with the fuel and vacuum passage therein, and special control means for the vacuum passage in combination therewith. The control means includes a float-actuated vacuum shut-off valve assembly, a hand-operated valve, and a pressure relief valve. The relative relationships for the fuel and vacuum passages in the filler assembly and the control means are critical.

3,774,655

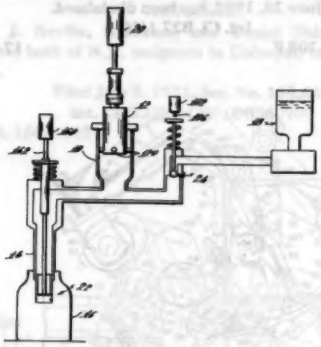
CONTAINER-FILLING APPARATUS

William H. Trusselle, 19 Liberty St., Braintree, Mass.

Division of Ser. No. 36,920, May 13, 1970. This application June 21, 1971, Ser. No. 154,942

Int. Cl. B65b *3/14, 31/04, 3/18*

U.S. Cl. 141—46 16 Claims



Container-filling apparatus comprising a chamber connected to a source of material and to a filling nozzle and a ram supported for movement in the chamber in one direction to induct material from the source into the chamber and in the other direction to displace material from the chamber through the filling nozzle into a container supported therebelow. Valves control the flow of material from the source to the chamber and from the chamber to the nozzle, a motor effects reciprocation of the ram and a pneumatic control circuit controls the rate of reciprocation of the ram, provides for reducing the rate of the displacement stroke near the end of a filling operation and provides for preventing initiation of the displacement stroke in the event that there is no container in filling position below the filling nozzle. The filling apparatus is designed for single or multiple filling heads and when the apparatus is provided with multiple heads there are feed wheels for moving empty containers one at a time from an input conveyor onto the container supports for filling and for removing filled containers from the container supports after filling onto an output or discharge conveyor. The component parts of the filling head assembly comprising the chamber, ram, valves and filling nozzle are detachably connected by quick-release clamps to enable replacing and/or substituting one chamber and ram for another of different size and/or one nozzle for another in accordance with the viscosity and volume of the material being handled and for ease in cleaning.

3,774,656

AUTOMATIC FUEL DISPENSING NOZZLE

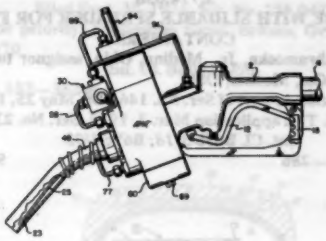
Edward A. Mayer, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,673

Int. Cl. B65b *3/26*

U.S. Cl. 141—128 10 Claims

An automatic fuel dispensing nozzle involving an improvement upon U.S. Pat. No. 3,586,071 in which the timed delay between the full flow and topping-off flow operations is effected by means of a dash-pot system normally kept full by a flow of fuel which shuts off during the operation of the dash-pot and thereafter controlledly released.



3,774,657

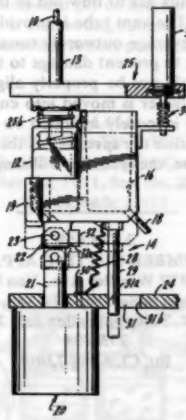
SAMPLE RECEIVING MECHANISM

Roy E. Smith, Villa Park, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Apr. 10, 1972, Ser. No. 242,443

Int. Cl. B65b *3/04*

U.S. Cl. 141—272 6 Claims



A tiltable tray mechanism is provided having a fixed support member, a normally horizontally disposed tray arranged above the support member, a piston and cylinder assembly fixedly mounted to the support member and disposed beneath the tray, and a clevis and pin arrangement for connecting the piston to the tray so that the tray is tiltable with respect to the piston out of its normally horizontal position. The piston and cylinder assembly has its piston generally vertically disposed and extending toward the tray. A coil spring is interposed between the tray and the fixed support member for urging the tray into the normally horizontal position, and the piston is operable upon retraction into its cylinder to overcome the bias of the spring and tilt the tray. A stop carried by the fixed support member is laterally displaced from the vertically disposed piston, the stop being located beneath the tray for engagement by the tray in response to retraction of the piston into its cylinder so that such engagement causes the tray to be tilted with respect to the horizontal and against the bias of the spring. A guide pin is fixed to the underside of the tray and ex-

tends through an opening provided in the fixed support member for engagement with the sides of the opening to thereby limit the extent of tilting movement of the tray.

3,774,658

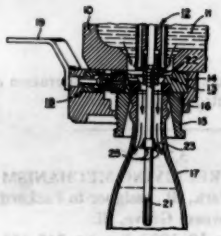
VENT TUBE WITH SLIDABLE SPREADER FOR FILLING CONTAINERS

Alfred A. Abramoska, Jr., Medina, Ohio, assignor to Arthur Products Co., Medina, Ohio

Continuation-in-part of Ser. No. 146,686, May 25, 1971, abandoned. This application Mar. 3, 1972, Ser. No. 231,649

Int. Cl. B65b *3/18*; B67c *3/02*

U.S. Cl. 141—286 **9 Claims**



A vent tube for container filling machines of the type in which the container to be filled, such as a bottle or can, is moved into contact with a filling valve which discharges a beverage into the container. The vent tube projects into the container and permits gas to flow out of the container as the beverage flows in. The vent tube is provided with a spreader that deflects the beverage outwardly toward the sides of the container. In order to prevent damage to the spreader or the container if it should not be properly aligned with the vent tube when the container is moved into engagement with the valve, the spreader is loosely mounted on the vent tube. If a container should strike the spreader as the container is being moved into the valve, the spreader will simply move upwardly out of the way.

3,774,659

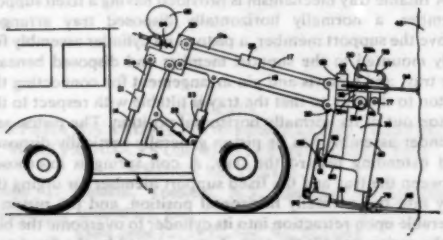
SONIC TIMBER CUTTING APPARATUS

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.

Continuation-in-part of Ser. No. 124,349, March 15, 1971, Pat. No. 3,688,824. This application July 20, 1972, Ser. No. 273,496

Int. Cl. A01g *23/08*

U.S. Cl. 144—34 R **3 Claims**



Sonic energy is coupled from an orbiting mass oscillator to a drive member. Unidirectional pulses of vibrational energy are coupled from the drive member through an acoustical rectifier to a cutter blade, the blade being biased against timber to be cut. The vibrational energy imparted to the cutter blade thus efficiently implements the cutting action.

3,774,660

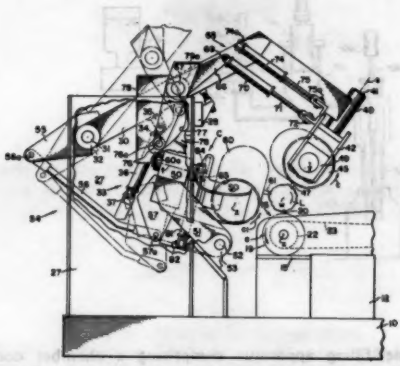
APPARATUS FOR DEBARKING LOGS

Norval K. Morey, Winn, and Leward N. Smith, Remus, both of Mich., assignors to Morbark Industries, Inc., Winn, Mich.

Continuation-in-part of Ser. No. 773,408, Nov. 5, 1968, Pat. No. 3,587,685. This application May 28, 1971, Ser. No. 143,695The portion of the term of this patent subsequent to June 28, 1988, has been disclaimed.

Int. Cl. B27 *1/00*

U.S. Cl. 144—208 F **17 Claims**



Log debarking apparatus and methods wherein a log to be debarked is presented to the nip between two rotatable log turning members and a toothed bark chipping member, the log being rotated and simultaneously moved lengthwise in a spiral path by the turning members to enable the debarking member to remove bark from substantially the entire periphery of the log.

3,774,661

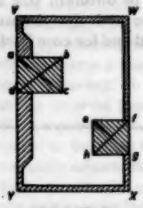
METHOD FOR CUTTING A SHAPED MEMBER FROM A WOOD BLOCK

Louis-Andre Duong Vinh, Auxerre, France, assignor to Etablissements Guilliet, Auxerre (Yonne), France

Filed Mar. 16, 1971, Ser. No. 124,779

Int. Cl. B27c *9/00*

U.S. Cl. 144—326 R **3 Claims**



A method of cutting within the interior of a piece of wood or like material having any length and in the length-wise direction without any need to provide a space for the removal of shavings which may be produced, comprising the steps of forming in the piece by conventional means at least one lon-

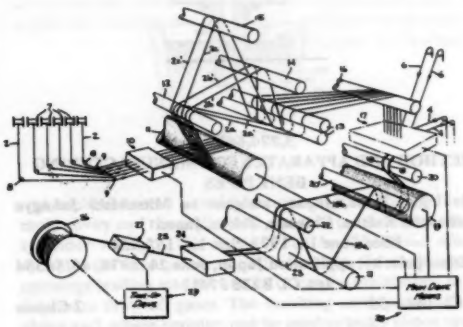
gitudinal groove having a bottom portion which terminates at the level of the internal portion to be cut, inserting in said groove the body of a tool having a cutting portion which corresponds in shape to the portion to be cut and causing said body to follow said groove by subjecting said piece and said tool to a relative movement of unidirectional and longitudinal displacement.

3,774,662

PRODUCTION OF HIGH SOFT STRETCH TAPES OF REINFORCING CORDS FOR MOLDED ELASTOMERIC ARTICLES

James J. Neville, Kinnelon, and Daniel Shichman, Cedar Grove, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Filed July 8, 1971, Ser. No. 160,669
Int. Cl. B32b *31/00*; D03d *7/00*
U.S. Cl. 156—148 22 Claims



The production of high "soft stretch" tapes of reinforcing cords usable in the single-stage building of 0° belted pneumatic tires completely in flat band form on standard building drums, is disclosed, together with a representative form of apparatus suitable for the practice of the invention. In general, the types of tape to be produced include one or more such cords, each having formed therein a multiplicity of undulations which in any given straight length of the tape are substantially planar, and a relatively weak and frangible but only minimally undulated stabilizing yarn, the components of the tape being secured to each other and held in their undulating state by a relative weak, chain stitch knitted, frangible stitching yarn or thread. The tape-forming apparatus generally includes an undulating and tying mechanism for both undulating the cords and securing them to each other in that state, and means for controlling both the cord feed rate into and the tape feed rate out of said mechanism. Where the tape is to be composed of cords additionally locally weakened at a multiplicity of longitudinally spaced points, the apparatus further includes means for weakening the cords prior to their entry into the undulating and tying mechanism, and means for phasing all the component cords of any given tape relative to each other so as to dispose the respective weakened portions of each cord out of lateral alignment with the weakened portions of at least each next adjacent cord. Where the tape further is to have a relatively higher cord count, provided by uniting a plurality of relatively lower cord count tapes, the apparatus also includes means for phasing the low cord number tapes relative to each other. This abstract is not to be taken as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,774,663

TRUCK TIRE HAVING CARCASS EXTENSION

Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Ferrand, France

Filed Sept. 30, 1971, Ser. No. 185,042
Claims priority, application Great Britain, Oct. 14, 1970, 37,204/70
Int. Cl. B60c *15/06*
U.S. Cl. 152—362 R 4 Claims

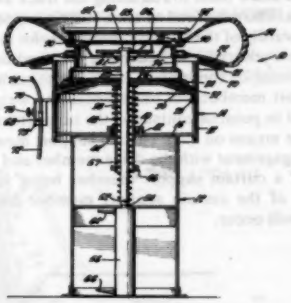
A pneumatic tire has a radial carcass formed of one or more plies of cords the ends of which are arranged near the steel wires in the beads. The carcass proper is extended in each bead by at least one additional ply or carcass extension adjacent to or encircling the bead wires and rising in the side. The cords of the additional ply or carcass extension are connected together by a connecting rubber of a grade different from that of the connecting rubber connecting the cords of the carcass proper.

3,774,664

APPARATUS FOR INFLATING TUBELESS TIRES

Edward A. Matysak, 612 Greengate St., Corona, Calif.

Filed Nov. 30, 1971, Ser. No. 203,152
Int. Cl. B60c *25/12*
U.S. Cl. 157—1.1 3 Claims



A tubeless tire inflating apparatus comprising an open-top cylindrical chamber having a radial air-sealing flange around its top edge that engages the bottom side wall of a tire, and a piston slidable within said chamber and having a sealing ring that engages the bottom flange of the wheel. Fixed to the underside of the piston at its center and projecting downwardly through a sealing ring in the bottom of the chamber is a tubular sleeve. A cylindrical shaft extends upwardly through the sleeve and through an aperture in the piston, and its bottom

end is attached to the actuating rod of an air cylinder. A plate is detachably secured to the top end of the shaft and bears against the top side of the wheel, so that downward movement of the actuating rod causes the wheel and piston to be pulled downwardly, thereby sealing the top bead of the tire against the wheel. Air introduced into the tire through the rim valve fills the tire and leaks past the piston into the chamber, causing the piston to rise until the bottom bead of the tire seats against its flange.

3,774,665

CURTAIN TRACK SYSTEM

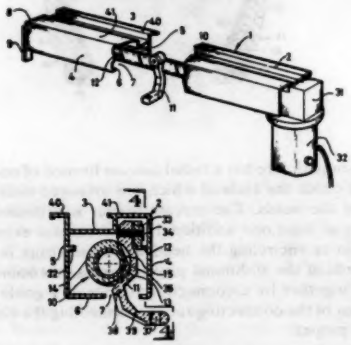
Henry Arthur Bourne, 17 Bridge St., Eltham, Australia

Filed Apr. 3, 1972, Ser. No. 240,673

Claims priority, application Australia, Apr. 8, 1971, 4546/71

Int. Cl. A47h *5/06*

U.S. Cl. 160—343 11 Claims



A Curtain Track System including an elongate drive member rotatable about its longitudinal axis and provided with a plurality of drive sleeves having continuous helical trackways on the surfaces thereof, and curtain support members having wheels at one end supporting them on a support track within a housing surrounding the drive member. The curtain support members are so positioned on the support track as to allow them to run along the track longitudinally of the system. The other end of each curtain support member extends outwardly of the housing through a slot in the wall of the housing to a point at which they are attached to a curtain, and the positioning on the support track is also such that each curtain support member will pivot under the weight of the curtain, about its point of contact on the support track into a position where means on each curtain support member will be in driving engagement with the drive member and whereby upon motion of a curtain support member being inhibited disengagement of the curtain support member from the helical trackway will occur.

3,774,666

DRAPE CURTAIN OR THE LIKE

Waldemar Bunger, Zamenhofweg 13, Schwelm, Germany

Filed Aug. 9, 1971, Ser. No. 170,060

Claims priority, application Germany, Aug. 8, 1970, P 20 39 511.3

Int. Cl. A47h *13/14*

U.S. Cl. 160—348 17 Claims

A drape, curtain or the like, which comprises a carrying strap and a fold forming cord floatingly extending in the upper edge range of the drape. The fold forming cord is bound at the end points of its floating sections corresponding with the length of one of an individual fold, of a fold group and of a frizzing group. At least one passage opening is coordinated to each of the floating sections, and the floating sections are capable of being pulled together selectively in loop shape on the at least one passage opening.

3,774,667

METHOD AND APPARATUS FOR MANUFACTURING BENT PIPES

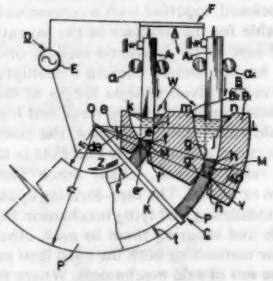
Akira Ujiie, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Chiyoda, Tokyo, Japan

Filed June 14, 1971, Ser. No. 152,854

Claims priority, application Japan, June 24, 1970, 45/54354

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 2 Claims



A method of manufacturing bent pipes which comprises melting a plurality of metal electrodes fed at a predetermined rate to an electroslag bath within a mold, allowing the molten metal thus formed to solidify to a shape conforming to the cross-sectional contour and curvature of a desired bent pipe, thereby forming a unitary bent pipe, and, at the same time, withdrawing said unitary bent pipe continuously along a curved path in agreement with the curvature of the desired bent pipe, and an apparatus adapted for the practice of the method.

3,774,668

VACUUM CASTING APPARATUS

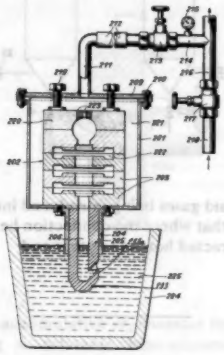
Julius Heimgartner, Post Attikon, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Division of Ser. No. 820,385, April 30, 1969, abandoned. This application Mar. 19, 1971, Ser. No. 126,007

Claims priority, application Switzerland, Feb. 28, 1969, 3034/69

Int. Cl. B22d 27/16

U.S. Cl. 164—255 4 Claims



A mold core and a mold casting are positioned to define a mold cavity and the melt of the material is drawn into the cavity under vacuum. The vacuum can be eliminated after the melt in the cavity has solidified about the melt entrance openings leading into the cavity or can be maintained to some degree to draw off gases. The resulting casting can be of any shape and, where annular, can be used to make piston rings.

3,774,669

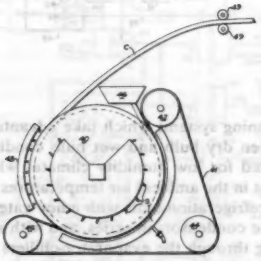
APPARATUS FOR HIGH SPEED CONTINUOUS CASTING

George E. Lenaeus; Daniel B. Cofer, both of Carrollton, and John H. Murphy, Atlanta, all of Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 821,299, May 2, 1969, Pat. No. 3,623,535. This application Jan. 28, 1971, Ser. No. 110,691

Int. Cl. B22d 11/06

U.S. Cl. 164—278 2 Claims



A high speed continuous casting apparatus and method wherein the method includes partially solidifying a molten metal in a mold defined between the peripheral groove of a rotating casting wheel and a flexible band until the metal shrinks and draws away from the casting wheel, thereupon removing the band from the casting wheel and subsequently cooling the metal to complete its solidification. The apparatus includes the combination of a casting wheel having a peripheral groove with a portion of its length closed by an endless band to form a casting mold and an auxiliary cooling means for cooling the metal to complete its solidification. This allows the casting wheel to be rotated at that rotational speed which causes the metal to pass from the casting wheel as, or shortly before or after, the metal shrinks away from the casting wheel, and as a result provides casting rates not achieved with prior art casting wheels.

3,774,670

CATERPILLAR-TYPE MOLD WITH NOZZLE HAVING SELF-LUBRICATING INSERT MEANS

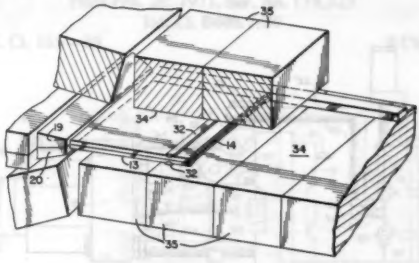
Ivan Gyongyos, Montana, Switzerland, assignor to Prolizenz AG, Chur, Switzerland

Filed June 23, 1971, Ser. No. 155,937

Claims priority, application Switzerland, June 24, 1970, 9611/70

Int. Cl. B22d 11/06

U.S. Cl. 164—279 6 Claims



A nozzle for the delivery of the molten metal to a mold with continuously moving walls in a strip casting process for metals, especially non-ferrous metals such as aluminum and aluminum alloys, the nozzle including a mouthpiece having inserts provided on its outer edge portions over the entire extent thereof, the inserts protruding above a general surface of the mouthpiece to an extent preventing a direct contact of the nozzle surface with portions of the mold and entry of the molten metal between the nozzle and the mold, the inserts being made of a self-lubricating material.

3,774,671

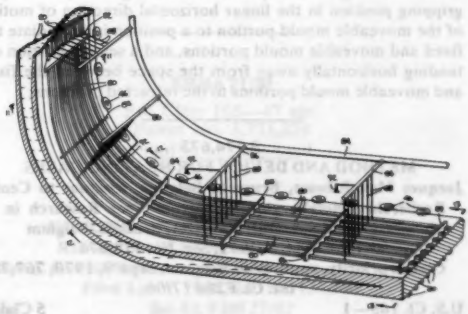
CONTINUOUS CASTING APPARATUS WITH STRAND SUPPORT MEANS

Irving Rossi, Dunros Farm James St., Morristown, N.J.

Filed Oct. 7, 1971, Ser. No. 187,306

Int. Cl. B22d 11/12

U.S. Cl. 164—282 26 Claims



Metal in partially solidified form is pulled continuously from a hollow mold by means of a dummy slab which is thin in one

dimension to bend about a curved path and which has aligner elements at its narrower edges to engage edge rolls for positioning the dummy slab. The dummy slab is also provided with removable knockout keys for disconnecting it from the cast metal. Special grid strips maintain the cast metal in an arched or concave configuration along its wide faces for rigidity and allow the wide faces to flatten out during solidification in a controlled manner so that the internal pressure of the metal will force it to a desired ultimate configuration.

3,774,672

ARRANGEMENT FOR REMOVAL OF MOULDED SIZED PIECES FROM A PRESS MOULDING MACHINE

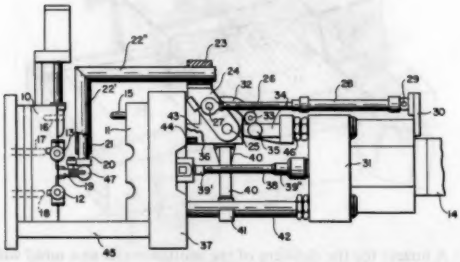
Hans Valdemar Ivansson, Herrljunga, Sweden, assignor to A. H. Anderson & Co., Aktiebolag, Ljung, Sweden

Filed July 14, 1971, Ser. No. 162,338

Claims priority, application Sweden, July 22, 1970, 10107/70

Int. Cl. B22d *17/22*

U.S. Cl. 164—344 **6 Claims**



A press moulding machine includes a fixed mould portion and a horizontally moveable mould portion moveable in a linear horizontal direction between open and closed positions with the mould portions, respectively, spaced apart or in engagement. The device also includes means for removing a moulded object from the space between the fixed and moveable mould portions. The object removal means includes a gripper member including a gripping element at one end for grippingly engaging a moulded object adjacent the moveable mould portion, and means for moving the gripping member in a horizontal direction for moving the gripping element between an object gripping position adjacent the moveable mould portion in the space between the fixed and moveable mould portions and a withdrawn position remote from the space, the path of the horizontal motion of the gripping element including a first portion extending from the object gripping position in the linear horizontal direction of motion of the moveable mould portion to a position intermediate the fixed and moveable mould portions, and a second portion extending horizontally away from the space between the fixed and moveable mould portions to the retracted positions.

3,774,673

METHOD AND DEVICE FOR HEATING GASES

Jacques Max Ribesse, Brussels, Belgium, assignor to Centre Recherches Metallurgiques-Centrum Voor Research in de Metallurgie and S.A. Distrigaz N.V., Brussels, Belgium

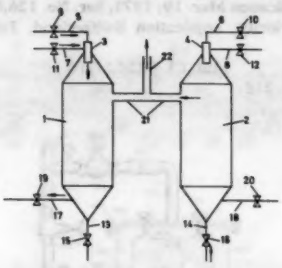
Filed Sept. 8, 1971, Ser. No. 178,674

Claims priority, application Belgium, Sept. 9, 1970, 767,786

Int. Cl. F28d *17/00*

U.S. Cl. 165—1 **5 Claims**

A method for heating of gases, particularly reformed hot gases intended for injection into a shaft furnace, in which the gases undergo a preheating treatment by passing into a heat exchanger composed of two cells, coupled in such a manner that when one is being heated the other is heating the gas and vice versa, the said two cells being interconnected at one of



their ends, the said gases being introduced into the cells at the end opposite to that where the connection between the cells is effected and extracted hot at the other end.

3,774,674

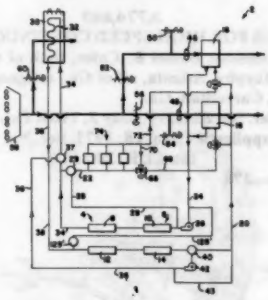
AIR CONDITIONING SYSTEM AND CONTROL INCLUDING METHOD AND MEANS

Alden I. McFarlan, 691 Dorian Rd., Westfield, N.J.

Filed Oct. 13, 1970, Ser. No. 80,448

Int. Cl. F25b *13/00*

U.S. Cl. 165—2 **12 Claims**



Air conditioning systems which take advantage of the difference between dry bulb and wet bulb conditions, and are especially suited for low humidity climates where there are wide variations in the ambient air temperatures. A system has a plurality of refrigeration units with a hot water stream flowing through the condensors in series, and with a chilled water stream flowing through the evaporator-chillers in series. The system balances the heating and cooling loads so that the internally produced heat is used to heat the periphery when such heat is required. Excess heat is dissipated, and additional heat is provided when necessary. The temperature of the hot water is higher than with the normal practice. The systems are operable to utilize exhaust air to cool heated liquid in a cooling tower or a dry air cooler to thereby carry heat away from the system. The cooling tower can also be used to heat the chilled water with the exhaust air so as to recover and use the heat which would normally be carried away by the exhaust air.

3,774,675

ROTARY HEAT-ACCUMULATIVE REGENERATOR FOR GAS TURBINE ENGINES

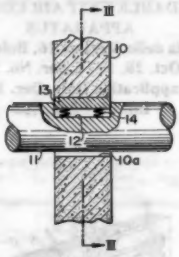
Sakaki Yoshiro, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Aug. 5, 1971, Ser. No. 169,405

Claims priority, application Japan, Oct. 27, 1970, 45/94131; Oct. 27, 1970, 45/94133

Int. Cl. F28d *19/04*

U.S. Cl. 165—8 8 Claims



A rotary heat-accumulative regenerator for gas turbine engines, including a rotatable heat-accumulator which is resiliently supported on a rotary shaft by means of compression springs mounted in longitudinal grooves in the shaft whereby shocks and impact invited by a driving force transferred to the heat-accumulator is absorbed by the springs. The rotary shaft may preferably be positioned in a path of cool air so that bearing associated with the shaft as well as the springs are isolated from heat in hot turbine exhaust. To this end the shaft may be hollowed to provide an internal passage through which air is passed to internally cool the shaft.

3,774,676

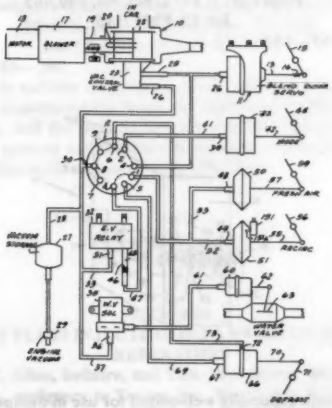
AUTOMOTIVE VEHICLE AUTOMATIC TEMPERATURE CONTROL SYSTEM

Rudolph J. Franz, Schaumburg, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 28, 1972, Ser. No. 238,838

Int. Cl. B60h *3/04*

U.S. Cl. 165—23 18 Claims



Automatic temperature control system for the passenger compartment of an automotive vehicle. The control is by vacuum modulated by the temperature of ambient air and the temperature of air in the passenger compartment of the vehicle and includes a vacuum motor operated by modulated vacuum regulating the position of a plenum mounted air blend door, controlling the passage of cold, tempered or heated air into the passenger compartment and positioning an electrical programmer, to provide the desired blower speeds and certain program functions of the system.

3,774,677

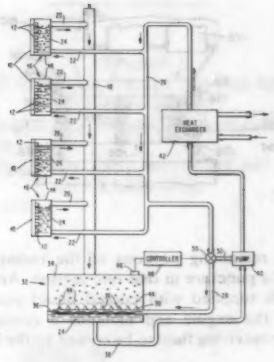
COOLING SYSTEM PROVIDING SPRAY TYPE CONDENSATION

Vincent W. Antonetti; Omkarnath R. Gupta, both of Poughkeepsie, and Kevin P. Moran, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,323

Int. Cl. B60h *1/00*

U.S. Cl. 165—39 9 Claims



A spray condensing and cooling arrangement is provided in a liquid cooling system to provide condensing of vapors generated by nucleate boiling at a heat source. Two-phase flow takes place from the heat source in the form of liquid and boiling vapors to said spray condensing and cooling means where the vapors are condensed by the cooler spray in the spray condensing and cooling means. The amount of spray and, accordingly, the amount of vapor condensation is controlled by a servo arrangement which regulates the pressure within the system.

ERRATUM

For Class 165—47 see:
Patent No. 3,775,229

3,774,678

COOLING SYSTEM WITH SELECTIVELY REPLACEABLE RADIATOR SECTIONS

Frank J. Glorisi, New Brunswick, N.J.

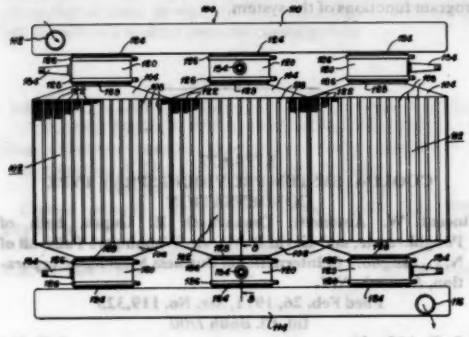
Filed Apr. 7, 1971, Ser. No. 131,993

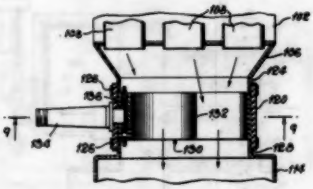
Int. Cl. F28f *27/02*

U.S. Cl. 165—76 4 Claims

A cooling system for an engine including a radiator for cooling a liquid circulated between the engine and the radiator

the radiator having a plurality of sections interconnected through conduits which pass externally between the radiator sections, the conduits thus being accessible for selective closing of a conduit or re-routing thereof to isolate one radiator section from the others and thereby enable continued operation of the remaining portions of the radiator despite the presence of a puncture in that one section. An auxiliary heat exchanger is supplied with cooled liquid passing from the radiator to the engine and includes a continuous annular chamber for receiving fluid to be cooled by the liquid.



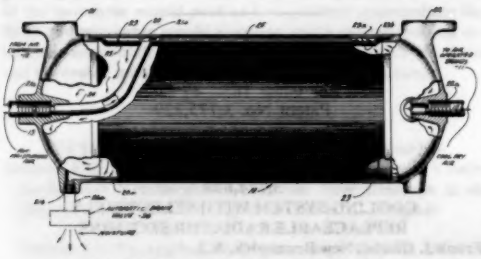


3,774,679

TANK

John D. McKenney, South Laguna, and Thomas R. Rumsey, Inglewood, both of Calif., assignors to Royal Industries, Inc., Pasadena, Calif.

Filed Oct. 12, 1971, Ser. No. 188,291
Int. Cl. F28b *3/00*
U.S. Cl. 165—111 **8 Claims**



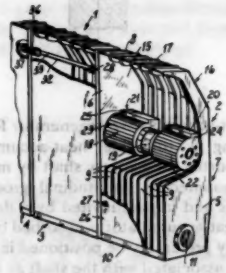
A tank for conveying a hot, moisturized, pressurized fluid stream constructed for cooling the fluid stream and separating out the moisture. The tank is provided with an internal passageway for conveying the fluid stream therethrough and conveying the fluid stream adjacent the inner wall of the tank in a heat exchange relationship. The tank wall is constructed of a good thermal conductor with the associated fluid passage wall constructed of a good thermal insulator. With the passage of the fluid stream through the tank, the heat is transferred to the outer wall of the tank and radiated to the ambient air by means of fins, or the like.

3,774,680

COMPOUNDABLE UNIT AIR CONDITIONING APPARATUS

Mario Andreoli, Via dello Sterlino 16, Bologna, Italy

Filed Oct. 28, 1971, Ser. No. 193,357
Claims priority, application Italy, Dec. 18, 1970, 3642 A/70
Int. Cl. F24h *3/00*
U.S. Cl. 165—122 **2 Claims**



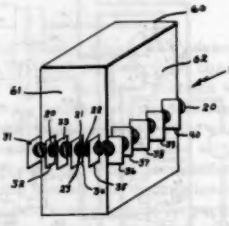
A compoundable unit for air conditioning apparatus comprising a box-like member formed with lower and upper windows, a tubular member extending throughout the box-like member and defining therein a passage for a working fluid, and a plurality of fins mounted parallel on the said tubular member inside the said box-like member in spaced relationship relative to one another.

3,774,681

SELF-SHAPED HEAT RADIATOR

Theodore E. Wirtanen, 29 Whippletree Road, Chelmsford, Mass.

Filed Apr. 3, 1972, Ser. No. 240,483
Int. Cl. F28f *1/36*
U.S. Cl. 165—184 **7 Claims**



A heat sink especially well-suited for use in dissipating heat from irregularly shaped surfaces. The heat sink comprises an endless coiled carrying spring of high heat conductive material, such as a copper alloy, in contact with, and suitably encompassing, the periphery of the irregularly shaped surface, and a

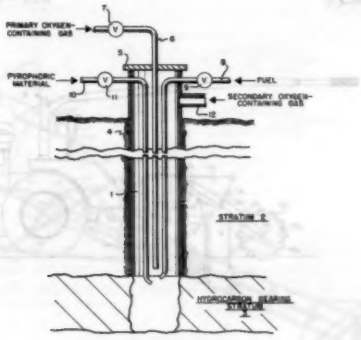
plurality of heat radiating fins, preferably of copper, detachably mounted on, and either lateral to, or longitudinal to, the coiled carrying spring, to best utilize the most advantageous air flow in the mounting area.

3,774,682

METHOD FOR INITIATING IN-SITU COMBUSTION

Issam S. Bousaid; Marc F. Fontaine, and Ralph J. Korstad, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,745
Int. Cl. E21b *43/24*
U.S. Cl. 166—260 10 Claims



A method of initiating in-situ combustion in a subterranean hydrocarbon-bearing formation by igniting a hydrocarbon fuel-air mixture in an input well by contacting the air with a pyrophoric material to give a spontaneous combustion reaction which thereafter initiates combustion of the hydrocarbon fuel and air.

3,774,683

METHOD FOR STABILIZING BORE HOLES

Dwight K. Smith, Duncan, Okla., and Carl A. Lane, Las Vegas, Nev., assignors to Halliburton Company, Duncan, Okla.

Filed May 23, 1972, Ser. No. 256,023
Int. Cl. E21b *33/138*; E21d *5/00*
U.S. Cl. 166—293 10 Claims

Unstable earthen formations, particularly subterranean formations, penetrated by holes are stabilized against cave-in, sloughing, and the like, by introducing into the unstable formation a cement composition comprising a hydraulic cement in admixture with certain short length fibers.

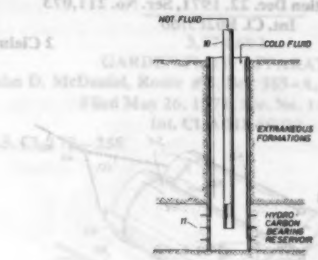
3,774,684

HOT FLUID INJECTION INTO HYDROCARBON RESERVOIRS

Joseph C. Allen, Bellaire, and Yick-Mow Shum, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 229,927
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 7 Claims

Hot fluid may be injected into a subterranean hydrocarbon reservoir with little heat loss through the casing walls on the way down to the injection zone by placing tubing inside the casing of an injection well and injecting a hot fluid or vapor into the tubing and a cold fluid into the annulus between the tubing and casing.

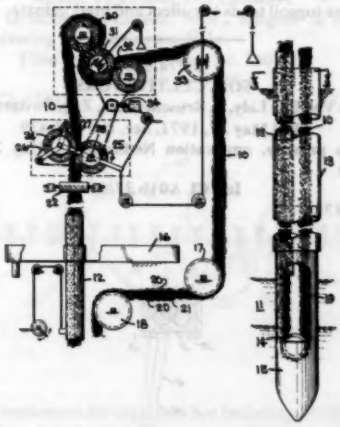


3,774,685

OIL MOP METHOD AND APPARATUS FOR PRODUCING AN OIL WELL

Herbert M. Rhodes, New Orleans, La., assignor to Oil Map, Inc., New Orleans, La.

Filed June 1, 1972, Ser. No. 258,507
Int. Cl. E21b *43/00*
U.S. Cl. 166—314 9 Claims



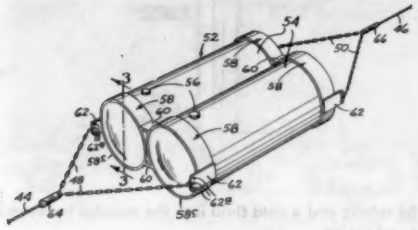
The present disclosure is directed to raising oil from shallow oil wells in which the oil generally of a high viscosity lays on top of a subterranean pool of oil and water. An endless mop of petrophilic hydrophobic fibers or thin gauge narrow strips is run down the well casing and placed in contact with the oil which it sorbs and which is entrained by the strips and raised to the surface where it is wrung from the mop and collected while the mop is returned to the oil pool to become ladened again with oil which will be brought to the surface.

3,774,686

DOUBLE BARRELED APPARATUS FOR CLEARING LAND

Lynn H. Michener, Vernonia, Oreg.

Continuation of Ser. No. 61,432, Aug. 5, 1970, abandoned.
This application Dec. 22, 1971, Ser. No. 211,073
Int. Cl. E02f 3/60
U.S. Cl. 172—26.5 2 Claims



A method and apparatus for clearing sloping, dry land terrain for tree growing purposes. A pair of stations are located on the terrain with one at a different elevation and spaced generally along the slope of the terrain from the other. A ground-working implement is dragged between the stations along the slope of the terrain. With such dragging, the implement roughly clears a shallow groove in the dirt forming the exterior of such terrain, which groove extends generally along the slope of the terrain. Further, with such dragging, periodically the continuity of such groove is broken whereby water barriers are produced along the length of the groove. The ground-working implement preferably comprises an implement body including a pair of generally parallel containers secured side-by-side in the implement body, the containers producing a pair of such grooves simultaneously on the implement being dragged, with such grooves separated by a narrow rise where topsoil tends to collect and predominate.

3,774,687

SOIL CULTIVATORS

Cornelis Van Der Lely, 7, Bruschenrain, Zug, Switzerland

Filed May 27, 1971, Ser. No. 147,439
Claims priority, application Netherlands, May 28, 1970, 7007690
Int. Cl. A01b 33/00
U.S. Cl. 172—49 12 Claims

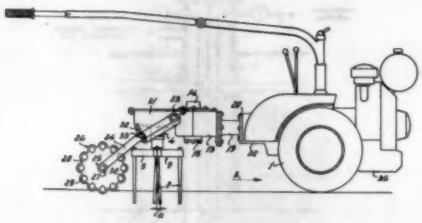
A cultivator has a frame supporting a plurality of rotatable soilworking members, each with a plurality of tines. The tines have a soil working portion and a fastening portion which is secured to an elongated tine support on its respective soil-working member. The fastening portion of the tine is secured a substantial distance along the length of the tine support to resist displacement.

3,774,688

CULTIVATOR AND TRACTOR COMBINATIONS

Ary Van Der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Filed July 26, 1971, Ser. No. 166,089
Claims priority, application Netherlands, July 30, 1970, 7011316
Int. Cl. A01b 33/06, 49/02, 33/08
U.S. Cl. 172—39 7 Claims



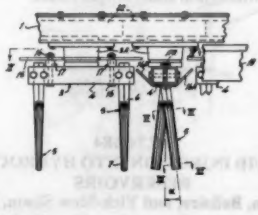
A cultivator tractor combination includes a row of rotatable soil working members of the cultivator portion, the latter being connected to the power take of the tractor portion. Adjacent soil working members have tines with tips that are further apart than their axes of rotation. A rotatable soil compression member is located to the rear of the cultivator portion close enough to the tines to clean same of soil and to press worked soil while affording some support for the cultivator portion. A series of pinion and bevel gearing rotates the soil working members from the power take off during operation.

3,774,689

TINE CULTIVATORS WITH SUPPORT SHIELDS

Ary Van der Lely, 10 Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36 Esdoornlaan, Rozenburg, Netherlands

Filed Aug. 17, 1971, Ser. No. 172,511
Claims priority, application Netherlands, Aug. 18, 1970, 7012157
Int. Cl. A01b 33/00
U.S. Cl. 172—112 13 Claims



A cultivator has a frame for attachment to a prime mover, soil working members with tines rotatably mounted below the frame, and one or more screening devices mounted adjacent

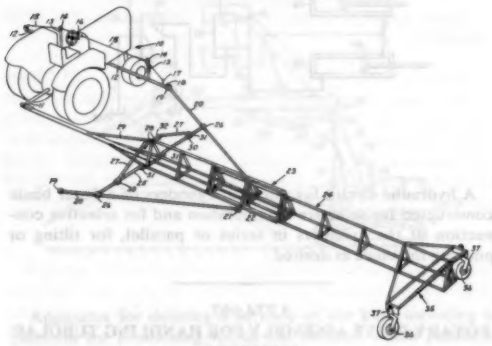
the soil working members to deflect stones and other debris during operation. Alternate soil working members have discs secured to the tine supports and the supports have inclined elements to deflect debris. A screening plate is positioned at each side of the soil working members and a strip secured to extend along the front of the frame. A soil smoothing roller is pivotably connected to trail the soil working members and adjust the working depth of same.

3,774,690

GROUND MARKING MACHINE

Edwin F. Booth, Rt. 1, Mosca, Colo.

Filed Jan. 17, 1972, Ser. No. 218,126
Int. Cl. A01b *17/00, 25/00*
U.S. Cl. 172—126 3 Claims



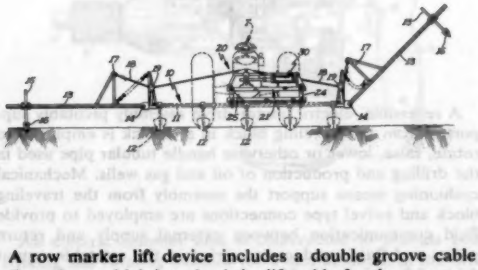
A ground marking machine for making marks on the ground to indicate the location of furrows or windrows for planting purposes, comprising ground marking apparatus detachably and pivotally connected to the rear of a power operated vehicle in either operative or transport positions. The marking apparatus comprises a swivel-wheeled carriage on the outer end of a beam which comprises telescopically mounted members. The marking apparatus extends sidewise from the vehicle and includes means for maintaining the beam at right angles to the direction of travel of the vehicle at either side of the vehicle. The apparatus also includes optionally usable means for making a windrow or additional row of marks parallel to another row at selected distance therefrom.

3,774,691

ROW MARKER LIFT DEVICE

Ernest R. Oak, and Lowell T. Oak, both of Park River, N. Dak.

Filed Aug. 14, 1972, Ser. No. 280,660
Int. Cl. A01b *17/00*
U.S. Cl. 172—130 3 Claims



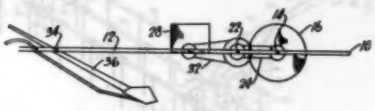
A row marker lift device includes a double groove cable pulley, about which is trained the lift cable for the row markers. A double acting hydraulic ram has a rack secured to its piston rod, and the rack engages a pinion which is secured to the cable pully axle. Extension and retraction of the hydraulic ram rotates the pulley selectively in opposite directions for raising and lowering the row markers.

3,774,692

GARDEN PLOW APPARATUS

John D. McDaniel, Route #3, Box 185-A, McComb, Miss.

Filed May 26, 1971, Ser. No. 146,923
Int. Cl. A01b *69/00*
U.S. Cl. 172—258 3 Claims



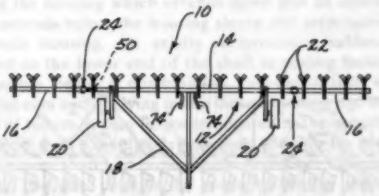
A horizontal U shaped frame is provided with a first horizontal transversely extending axle adjacent the curved portion of the member and supporting wheel means. A second axle parallel to the first and spaced rearward from the first is connected to the first by belt drive means. A motor supported on a platform extending between the side bars of the frame, at the rear of the wheel means, drives the second axle to drive the first axle and produce motive power. The user guides the apparatus by holding the free ends of the member legs. Plow means, pivotally secured to a third parallel axle disposed rearward of the motor and loaded by a small portion of the motor's weight, digs into the ground and provides plowing action as the member moves forward.

3,774,693

AGRICULTURAL IMPLEMENT

Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing Inc., Lexington, Nebr.

Filed Dec. 23, 1970, Ser. No. 100,910
Int. Cl. A01b *49/00*
U.S. Cl. 172—311 17 Claims



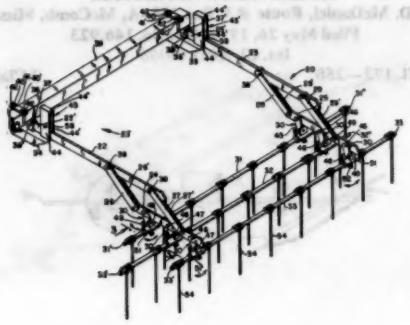
A farm implement having a tool bar including a hollow main frame and oppositely extending wing sections pivotal between horizontal and vertical positions. A hydraulic cylinder is positioned inside the opposite ends of the hollow main frame and engages an ear on the adjacent wing section extending into the main frame when in a lowered position. Upstanding aligned apertured ears on the ends of the main frame and wing sections provide hinges therebetween. The ear on the wing sections extending into the opening in the end of the main frame is limited against lateral movement by being received in a notch in the base plate on which the hydraulic cylinder is carried for removably attaching the cylinder in the hollow main frame.

3,774,694

FLEXIBLE HARROW DEVICE

Robert B. Gates, Loraine, N. Dak.

Filed Oct. 20, 1971, Ser. No. 191,029
Int. Cl. A01b *19/08*
U.S. Cl. 172—617 2 Claims



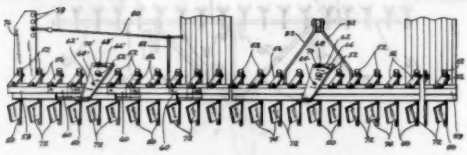
The invention comprises a flexible harrow device. The flexile harrow device has a pair of side beams which are pivotally mounted to the rear frame member of a cultivator and extend rearwardly therefrom. The side beams each have a second beam member mounted in a parallel linkage to said first beam member. A plurality of short plate members are pivotally mounted about a horizontal axis to each of the second beam members. Each second beam member has a plate structure attached thereto to pivot about an axis perpendicular to said horizontal axis, with said plate structure being fixed to the harrow support bars carrying the cultivator teeth, to thereby provide a swivel connection between the second beam members of the frame and the harrow bars.

3,774,695

SAND TRAP CONDITIONING DEVICE

Maynard K. Voorhees, Cedar Falls, Iowa, assignor to Standard Manufacturing Company, Cedar Falls, Iowa

Filed Apr. 10, 1972, Ser. No. 242,632
Int. Cl. A01b *35/08*
U.S. Cl. 172—691 5 Claims



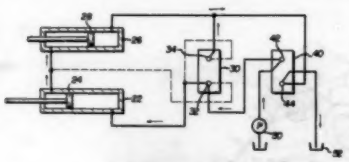
A sand trap conditioning device is disclosed herein and generally comprises an elongated laterally extending frame means adapted for towing behind a prime mover. A plurality of substantially flat vanes are secured to the frame means and extend below the frame means to penetrate the sand. The vanes are disposed in an oblique plane with respect to the frame means so as to permit the vanes to move the sand upwardly and laterally from the lower portion of the vanes to move and dress the sand and to permit drying of the sand. An adjustment means is provided on the frame means for adjusting the position of the vanes in a simultaneous manner. A portion of the frame means is flexible in a vertical direction to permit the frame means to conform to surface variations in the sand.

3,774,696

PITCH-TILT HYDRAULIC CIRCUITS FOR DOZER BLADES

Rudolf Horsch, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 13, 1971, Ser. No. 188,826
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 1 Claim



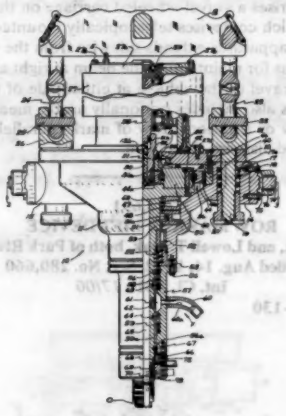
A hydraulic circuit for pitch-tilt cylinders of a dozer blade constructed for selective manipulation and for selective connection of the cylinders in series or parallel, for tilting or pitching the blade as desired.

3,774,697

ROTARY DRIVE ASSEMBLY FOR HANDLING TUBULAR MEMBERS

Cicero C. Brown, Houston, Tex.

Continuation-in-part of Ser. No. 130,597, April 2, 1971. This application Dec. 9, 1971, Ser. No. 206,325
Int. Cl. E21b *17/05*
U.S. Cl. 173—20 13 Claims



A reversible, electric motor drive assembly pivotably supported from the traveling block in a derrick is employed to rotate, raise, lower or otherwise handle tubular pipe used in the drilling and production of oil and gas wells. Mechanical cushioning means support the assembly from the traveling block and swivel type connections are employed to provide fluid communication between external supply and return points and fluid conductors carried in the rotatable output drive of the drive assembly.

In a modified form, a reduction gear with variable gear ratios is employed to power a dual conduit system which provides a fluid passage for conveying drilling fluids to the drill bit and a separate passage for returning fluids and cuttings to the wellhead.

3,774,698

APPARATUS FOR REMOVING LININGS AND OR/SLAG FROM FURNACES AND THE LIKE

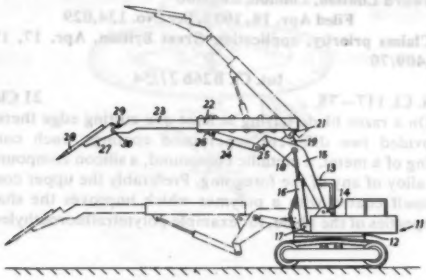
David Roy Mosley, Kingsteignton, England, assignor to Harvey Plant Holdings Limited, Devon, England

Filed Dec. 23, 1971, Ser. No. 211,421

Claims priority, application Great Britain, Dec. 31, 1970, 62,038/70

Int. Cl. E21c *11/02*

U.S. Cl. 173—43 6 Claims



Apparatus for delining a furnace of the kind including a platform for positioning within the furnace, which platform carries a turntable on which a boom is mounted for pivotal movement in a vertical plane. A telescopic jib is pivotally connected by one of its ends to the swinging end of the boom for pivotal movement in said vertical plane. At the other end of the jib is pivotally mounted for adjustment in said vertical plane a cradle for supporting a power tool. The relative pivotal movements of the boom, jib and cradle and extension and contraction of the telescopic jib are effected by power-operated means.

3,774,699

HAMMER DRILL WITH SLIDABLE ROTATION GEAR AND LOCK

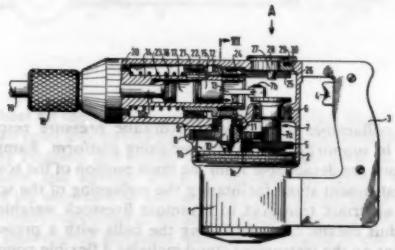
Peter Schmuck, Mauren, Fuerstentum, Liechtenstein, assignor to Hilti Aktiengesellschaft, Fuerstentum, Liechtenstein

Filed July 21, 1972, Ser. No. 274,050

Claims priority, application Germany, July 21, 1971, P 21 36 523.1

Int. Cl. E21c *1/12*

U.S. Cl. 173—48 10 Claims



An electric hammer drill is constructed to provide both striking and rotating motions for a tool mounted in the drill. Further, the rotational motion is provided by a gear wheel which, in turn, is driven by a pinion. If only striking motion is to be transmitted to the tool, the gear wheel can be disengaged from the pinion and, if required, the gear wheel in its disengaged position can be locked against rotational movement. The gear wheel is normally biased into engagement with the pinion. An operating lever is positioned on the hammer drill for selecting the desired arrangement of the gear wheel.

3,774,700

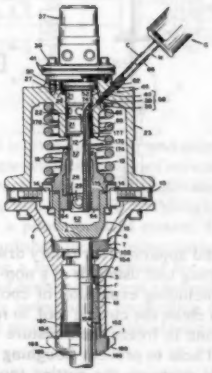
THRUST BEARING FOR IMPACT TOOL AND OTHER ROCK PENETRATING TOOLS

William L. Shepherd, West University Place, Tex., assignor to Hughes Tool Company, Houstin, Tex.

Filed Mar. 8, 1971, Ser. No. 121,659

Int. Cl. B25d *1/00*

U.S. Cl. 173—119 5 Claims



There are three principal areas within a main housing to be lubricated, each area involving some part of a power shaft which may be considered to be vertically oriented. The first of these areas (or volumes) is a thrust bearing at the upper end of the shaft, where it has an integral radially outjutting flange supported in a shoulder formed by the main housing. The second area is a radial bearing between the cylindrical surface of the shaft and a confronting bore in a reentrant sleeve portion of the housing which extends down into its interior. The shaft extends below the housing sleeve and terminates inside the main housing. An axially reciprocating subhousing is secured to the lower end of the shaft in sealing fashion, this subhousing being a combination cam-and-striker member with the cam surface lying inside the subhousing and engaging a pair of rollers or cam followers secured to the opposed ends of a short shaft extending transversely through the lower end of the power shaft and projecting at both ends to support the rollers. The third area is the space within the subhousing, which is filled with lubricant to protect the parts of the camming mechanism.

To accomplish the needed lubrication, a main passageway extends from the outside of the main housing to a vent in the bore of the sleeve passageway, where a bearing spacer is provided between a pair of axially spaced radial bearings. This spacer, which is circumferentially floating, has a multiplicity of windows, and also has a groove in its outer surface which permits lubricant to feed the windows. This arrangement also enables lubricant to flow up and down to the two radial bearings. The windows are in flow communication with a short radial passageway in the main shaft which joins an offset axial passageway extending from its juncture with the radial passageway to the bottom of the shaft and thus into the space inside the subhousing member suspended from the lower end

of the power shaft. The main passageway through the outer or main housing contains a check valve for injecting lubricant, and this main passageway has a branching passageway leading to the first area, containing the thrust bearing.

3,774,701

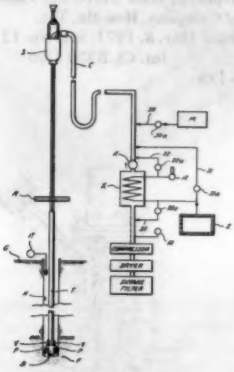
METHOD AND APPARATUS FOR DRILLING

Carnes W. Weaver, 5426 Tupper Ln., Houston, Tex.

Filed May 7, 1971, Ser. No. 141,215

Int. Cl. E21b *7/00*

U.S. Cl. 175—17 **17 Claims**



A method and apparatus for rotary drilling an earth formation with a cutting tool using air as a non-polluting circulating drilling fluid including expansion of cooled and compressed air to cool and clean the cutting tool, to remove cuttings from the drill hole and to freeze the moisture in the formation adjacent the drill hole to prevent sloughing of the walls into the drill hole. Side ports on the cutting tool provide additional cooling to the circulating air for cooling the walls of the drill hole. An anti-freeze solution is added to the circulating air to prevent freezing of water in the well hole. The method may also be used in obtaining core samples having the moisture therein frozen.

3,774,702

FORMATION CHIP SAMPLING METHOD

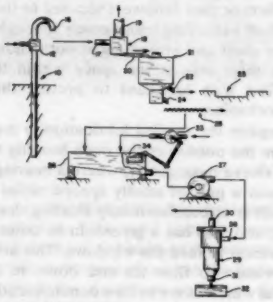
Wayland D. Elenburg, Box 1588, Monahans, Tex.

Division of Ser. No. 4,546, Jan. 21, 1970, Pat. No. 3,664,440.

This application May 22, 1972, Ser. No. 255,727

Int. Cl. E21b *21/00*

U.S. Cl. 175—66 **3 Claims**



Formation chip sampling method for separating solids from the liquid contained in drilling mud which has been obtained from an earth boring operation. The returned drilling mud is flow connected in series relationship to a gas separator, a splitter which reduces the amount of sample to be treated, and to a reservoir. A pump flow connects the reservoir to a cyclone type separator which removes the solids from the sample. The reservoir further includes a level controller which provides make-up liquid so as to provide the pump with optimum suction conditions.

3,774,703

RAZOR BLADES AND METHODS OF MANUFACTURE THEREOF

Michael D. Sanderson, Egham, England, assignor to Wilkinson Sword Limited, London, England

Filed Apr. 14, 1971, Ser. No. 134,029

Claims priority, application Great Britain, Apr. 17, 1970, 18,409/70

Int. Cl. B26b *21/54*

U.S. Cl. 117—75 **21 Claims**

On a razor blade having at least one cutting edge there are provided two different superposed coatings, each coating being of a metal, a metallic compound, a silicon compound or an alloy of any of the foregoing. Preferably the upper coating is itself coated with a polymer which improves the shaving properties of the blade, for example polytetrafluoroethylene.

3,774,704

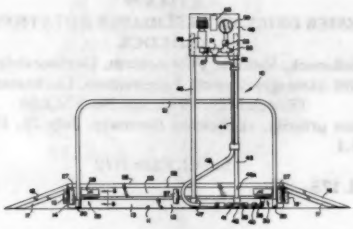
PORTABLE HYDRAULIC LIVESTOCK SCALE

Robert J. Purcell, P.O. Box 626, Garibaldi, Oreg.

Filed May 30, 1972, Ser. No. 258,092

Int. Cl. G01g *21/00, 5/04*

U.S. Cl. 177—126 **4 Claims**



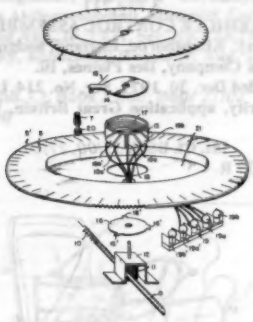
A collapsible scale having hydraulic pressure responsive cells in support of an animal weighing platform. Ramp components are detachable from the main portion of the scale as is an instrument stand facilitating the collapsing of the scale for pick-up truck transport to a remote livestock weighing site. Conduit means communicating the cells with a pressure indicator on the instrument stand includes a flexible component allowing detachment and repositioning of the stand without conduit separation. Adjustable pre-loading means for the cells and conduit means permit pressurizing of same prior to start of a weighing operation.

3,774,705

SYSTEM FOR LIGHTING A GROUP OF LAMPS IN A PERSONAL WEIGHING DEVICE

Masafumi Muroga, Tokyo, Japan, assignor to Kabushiki Kaisha Tanita Seisakusho, Tokyo, Japan

Filed Aug. 7, 1972, Ser. No. 278,354
Claims priority, application Japan, Aug. 8, 1971, 46/70449
Int. Cl. G01g 23/14
U.S. Cl. 177—173 4 Claims



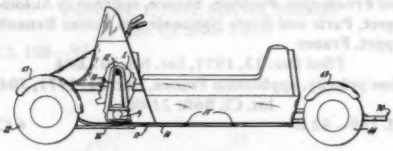
A group of lamps on a weighing device comprises a lamp adapted to be lit in accordance with a standard weight (with respect to a particular height of a weighed person). Further, a plurality of other lamps are adapted to be lit in accordance with a predetermined percentage excess or a shortage, relative to the standard weight. Thus, a condition relative to the standard weight may be directly indicated to a weighed person in accordance with a particular lamp which is lit.

3,774,706

WHEEL KIT FOR SNOWMOBILES

Elmer Carl Kiekhaefer, 2408 Cypress Gardens Rd., Winter Haven, Fla.

Filed Oct. 21, 1971, Ser. No. 191,396
Int. Cl. B62m 27/02; B62d 61/00
U.S. Cl. 180—5 R 9 Claims



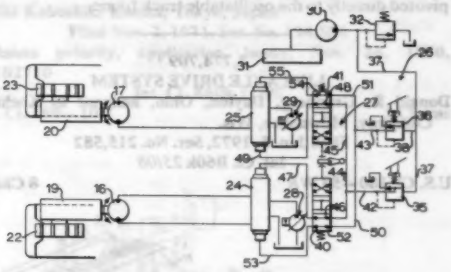
A wheel kit replaces the skis of a snowmobile with a spring mounted front axle having steerable wheels secured thereto by separate kingpins and having leaf springs disposed in an outward flare, and another wheel kit replaces the endless drive track of the snowmobile with a swing frame having its forward end pivotally supported at the axis of the transverse drive shaft of the snowmobile generally beneath the engine at the front end, and having its rear end supported on a transverse shaft carrying a pair of adjacent rear drive wheels with means driving the same from said transverse drive shaft and with resilient means supporting the rear end of the snowmobile upon the swing frame.

3,774,707

HYDRAULICALLY POWERED DRIVE & STEERING SYSTEM FOR TRACK TYPE VEHICLE

John W. Bridwell, Peoria, and Kenneth R. Lohbauer, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1971, Ser. No. 212,125
Int. Cl. B62d 11/04
U.S. Cl. 180—6.48 8 Claims



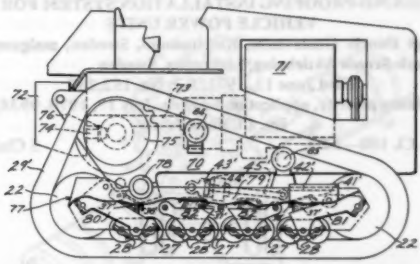
A hydraulic circuit to provide power and steering functions for a track type vehicle wherein a pair of reversible fluid motors coupled to the track assemblies are individually driven by a separate fluid pump and the speed and direction of the motors is controlled by a pilot operated system. Control of the pilot system is accomplished by two interconnected pilot control circuits including a first pilot circuit for controlling the speed and direction of both motors and a second pilot control circuit for selectively individually controlling the speed and direction of the fluid motors to provide steering functions for the vehicle.

3,774,708

TRIANGULAR TRACK RESILIENT BOGIE SUSPENSION

Robert J. Purcell, Washington, and Kenneth E. Wehr, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1971, Ser. No. 212,396
Int. Cl. B62d 55/12, 55/16, 55/30
U.S. Cl. 180—9.5 14 Claims



An assembly for supporting and driving a vehicle with a crawler track has the track chain engaged on a pair of spaced apart idler wheels and a drive sprocket situated between the idlers and upwardly therefrom whereby the chain is maintained in a triangular configuration with the sprocket and drive elements situated well above the abrasive conditions at ground level, the entire assembly being oscillatable relative to the associated vehicle.

To provide good resiliency and recoiling ability under high speed, heavy duty conditions each idler is mounted on one leg of an angled member which is pivoted to a fluid shock absorbing cylinder attached to an oscillatable track frame. Resilient means acting on the other leg comprises compression pads exhibiting a progressive spring rate whereby the idler may shift upwardly or backwardly as necessary to absorb shocks and reduce wear.

Pairs of load carrying track rollers are mounted on bogies pivoted to the other leg of the angled member.

In an alternative embodiment the track roller bogies are pivoted directly to the oscillatable track frame.

3,774,709

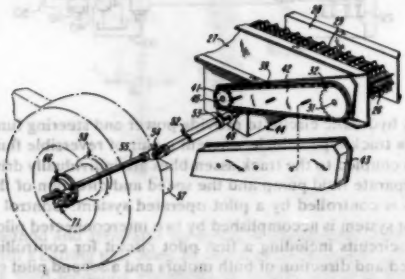
LIVE AXLE DRIVE SYSTEM

Donald R. Granberg, Dayton, Ohio, assignor to Koehring Company, Milwaukee, Wis.

Filed Jan. 5, 1972, Ser. No. 215,582

Int. Cl. B60k *25/08*

U.S. Cl. 180—53 WA **8 Claims**



A wheel mounted work unit features operating components arranged to selectively respond to wheel movement. As illustrated in a farm implement in the nature of a fertilizer spreader, operating components thereof l ave a directly coupled live axle drive. The drive axle mounts for rotation in and relative to a supported wheel element, which in turn mounts a separable coupling device. The coupling device is so arranged that a simple release thereof from a latched position produces a direct drive of the live axle, which drive is proportioned to wheel movement.

3,774,710

SOUND-PROOFING INSTALLATION SYSTEM FOR VEHICLE POWER UNITS

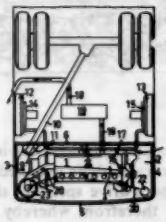
Bengt Henrik Gustavsson, Katrineholm, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed June 11, 1971, Ser. No. 152,237

Claims priority, application Sweden, July 17, 1970, 9935/70

Int. Cl. B60k *13/00*

U.S. Cl. 180—54 A **5 Claims**



A soundproofing installation system for vehicle power units, particularly in buses with rearmounted power units, where the engine is located in a closed chamber, the chamber being in the form of a double-wall box and comprising an integral part of the vehicle structure. At least some of the confining walls of the chamber are provided with soundproofing material, and the chamber accomodates power transmission means connected to the engine, and is provided with sealed lead-throughs for systems located externally of the chamber and connected to or forming part of the power unit. The radiator system is divided into two systems, each with a separately driven fan, and is located outside the chamber.

3,774,711

VEHICLE CONTROL ASSEMBLY

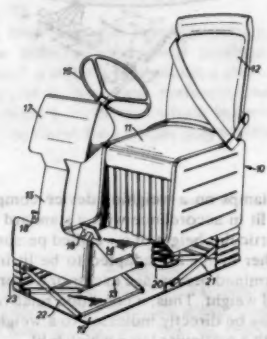
Robert R. Lacey, Kingsthorpe, England, assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 30, 1971, Ser. No. 214,155

Claims priority, application Great Britain, Dec. 31, 1970, 61,960/70

Int. Cl. B60k *35/00, 27/00*

U.S. Cl. 180—77 R **4 Claims**



A vehicle operator's seat and the vehicle's operating controls such as the steering wheel and floor pedals are isolated from vibrations of the vehicle by being mounted on a common support base which is attached to the vehicle cab or frame by means of a spring suspension. The spring suspension preferably comprises a scissor-type linkage and a spring.

3,774,712

ARRANGEMENT OF AN ENGINE-TRANSMISSION UNIT IN AN AUTOMOBILE VEHICLE

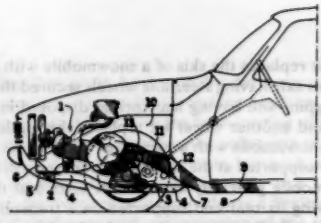
Armand Froumajou, Pontoise, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Billancourt, France

Filed Dec. 13, 1971, Ser. No. 207,044

Claims priority, application France, Dec. 31, 1971, 7047497

Int. Cl. B60r *21/00*

U.S. Cl. 180—82 R **6 Claims**



An arrangement in an automobile vehicle in which inclined downwardly-facing faces on extensions rigidly integral with

the rigid framework of the vehicle are adapted to co-operate with second faces on the engine-transmission unit in such manner that when the unit is urged into the vehicle owing to a violent shock on the unit having a longitudinal component the second faces come into contact with the inclined faces which act as guide ramps to deviate the unit downwardly of the framework.

3,774,713

INSTRUMENT PANEL OF A MOTOR VEHICLE

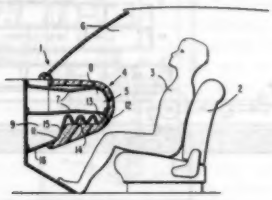
Wilhelm R. Stegmaier, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellshaft, Stuttgart, Germany

Filed Aug. 26, 1971, Ser. No. 175,171

Claims priority, application Germany, Aug. 26, 1970, P 20 42 220.2

Int. Cl. B60k *35/00*; B60r *21/02*

U.S. Cl. 180—90 **16 Claims**



An instrument panel in a motor vehicle with a padded projection essentially rectangularly shaped in cross section and protruding into the vehicle interior, which includes an essentially obliquely downwardly extending support anchored in the foot space of the vehicle, and in which the entire surface of the projection as also essential parts of the surface of the support are covered by a padding, preferably of foamed material while the walls of the projection as well as the support carrying the padding are permanently deformable independently of one another under the force of an impact of a passenger.

3,774,714

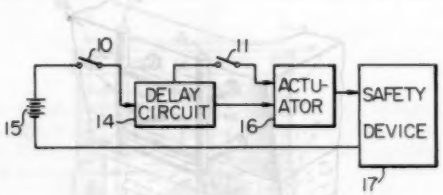
MOTOR VEHICLE SAFETY DEVICE

Keizaburo Usui, Yokohama City, and Takashi Haruna, Yokosuka City, both of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Oct. 1, 1971, Ser. No. 185,538

Int. Cl. B60r *21/08*

U.S. Cl. 180—91 **3 Claims**



A collision impact sensor and initiator circuit in which a front switch, made of two ribbon like contacts, is mounted on a car bumper from end to end and a similarly constructed rear or initiator switch is mounted behind the bumper on the car body. When a collision occurs at a low vehicle speed the front switch is closed feeding current into a delaying capacitor for preventing the initiator switch from causing actuation even if the initiator switch is closed in the collision after a preselected time interval, but in a collision at a high vehicle speed the bumper collapses and closes the initiator switch in a shorter time than the preselected interval and actuation of the safety device takes place.

3,774,715

VEHICLE CONSTANT-SPEED CRUISING DEVICE

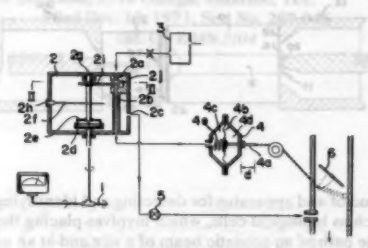
Hiroshi Matsubara, Sayama-shi, Japan, assignor to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1971, Ser. No. 194,886

Claims priority, application Japan, Nov. 24, 1970, 45/102710

Int. Cl. B60k *31/00*

U.S. Cl. 180—108 **3 Claims**



A vehicle constant-speed cruising device that is simple in construction, in which a rotary fluid-pressure converter of the type mentioned above is employed in such a way as to generate an output related to a differential pressure between the atmosphere and a space in communication with an air intake pipe of an engine.

3,774,716

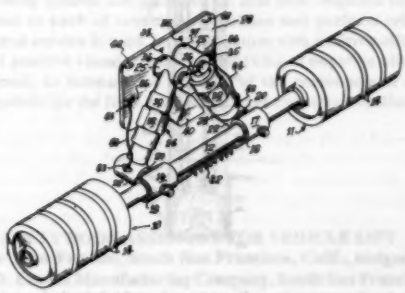
ANTIDRIFT MECHANISM FOR AN AIR CUSHION VEHICLE

Jack F. Vaughen, 26807 Spring Creek Rd., Palos Verdes Peninsula, Calif.

Filed Jan. 19, 1972, Ser. No. 219,000

Int. Cl. B60v *1/00*

U.S. Cl. 180—119 **12 Claims**



A transverse axle structure carries a pair of ground wheels and two downwardly divergent arms connect the vehicle to the axle structure. Pivot means connect the upper ends of the two arms to the vehicle and additional pivot means connect the lower ends of the arms to corresponding slidable collars on the axle structure, the axes of all four pivot means extending

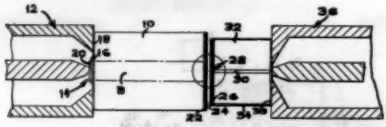
longitudinally of the vehicle. When the vehicle tends to drift to one side, the slidable collar on that side abuts a corresponding stop on the axle structure to place the arm on that side under longitudinal compression to limit the drift of the vehicle relative to the two ground wheels.

3,774,717

METHOD OF AND APPARATUS FOR PARTICLE DETECTION AND IDENTIFICATION

Marvin Chodorow, Menlo Park, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Dec. 27, 1971, Ser. No. 212,102
Int. Cl. G01n *29/02*
U.S. Cl. 181—.5 NP **8 Claims**



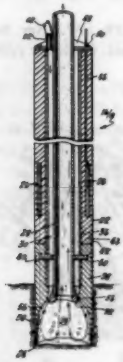
Method of and apparatus for detecting and identifying particles, such as biological cells, which involves placing the particle in the path of an acoustic beam of a size and at an acoustic wavelength comparable to particle size and detecting the acoustic perturbations which result.

3,774,718

IN-SITU ACOUSTIC SEDIMENT PROBE

Yoshiya Igarashi, Altadena; James R. Campbell, Arcadia, and Richard L. Allman, La Canada, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 257,022
Int. Cl. E21c *39/00*
U.S. Cl. 181—.5 NP **10 Claims**



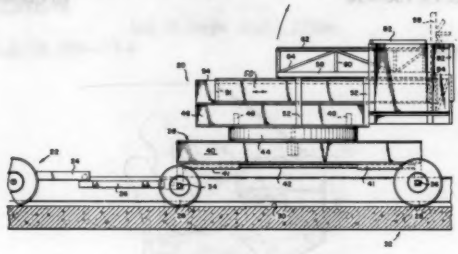
An in-situ acoustic sediment probe which includes a barrel having a bottom cutting edge. An acoustic transducer is mounted on the barrel and means are mounted within the barrel for removing sediment adjacent to the cutting edge as the barrel penetrates the sediment. The sediment removing means may include an open-ended tube concentrically mounted within the barrel so as to provide an annular water passage between the barrel and the tube. The tube has a bottom end which is spaced above the bottom cutting edge of the barrel so that upon forcing water through the water passage the water will jet into the barrel space below the tube, remove sediment, and displace the sediment upwardly through the tube. In this manner, the sediment adjacent to the transducer will remain substantially undisturbed so that more accurate acoustic data can be obtained with the probe.

3,774,719

ARTICULATED APPARATUS AND SCAFFOLD THEREFOR

Lewis Lee Lindsay, Jr., Clarksville, Va., assignor to Bridge Painting, Inc., Clarksville, Va.

Filed May 17, 1972, Ser. No. 253,934
Int. Cl. E04g *1/22*
U.S. Cl. 182—63 **14 Claims**



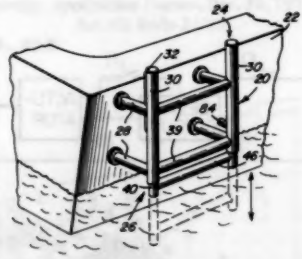
An articulated apparatus and scaffold platform therefor especially useful in connection with removing scaffolding from or painting the underside of a bridge or the like. The apparatus is intended to be mounted on a cart or other portable equipment so as to be readily transported over a highway. The articulation of the apparatus makes it possible for the apparatus to find relatively wide usage in accomplishing numerous tasks which must be performed by workmen who can stand on a suspended scaffold or temporary platform with a reasonable range of activity while still coming within the legal height and width requirements for travel over a highway.

3,774,720

POWER-OPERATED RETRACTABLE LADDER FOR PLEASURE BOATS

Cecil Carlton Hovey, P.O. Box 626, Maitland, Fla.

Filed Sept. 9, 1971, Ser. No. 179,049
Int. Cl. B63b *29/20*; E06c *5/06*
U.S. Cl. 182—91 **10 Claims**



A boat ladder for pleasure boats to enable a user to easily get into or out of a boat when in the water and also get into and out of the boat when loaded on a transporting trailer, including a movable section and a stationary section supported

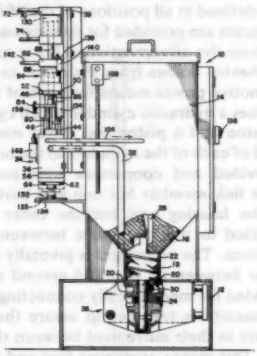
from the boat hull, together with an interconnection with the movable section to move it from an extended position to a retracted position.

3,774,721

INJECTION MACHINE FOR WICKING MATERIAL

Roger T. Hollowell, Owosso, Mich., assignor to Permawick Company, Inc., Detroit, Mich.

Filed Apr. 26, 1971, Ser. No. 137,504
Int. Cl. F01m 1/00, 11/02
U.S. Cl. 184—1 D 10 Claims



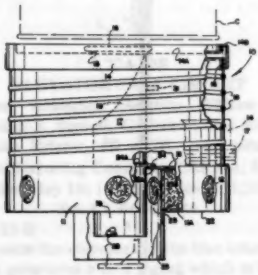
A bearing is clamped and held in position by a machine during operation of the machine. The machine reliably injects a metered amount of a lubricant impregnated wicking material into an annular cavity surrounding the bearing. The lubricant impregnated wicking material is injected into the bearing annulus by a plurality of injectors and enters the bearing annulus through a plurality of courses. The bearing annulus is thus completely filled with uniformly lubricated wicking material. Additionally, the injection machine moves the lubricant impregnated wicking material in a manner to preclude agglutination of the material at any point within the machine.

3,774,722

COMBINATION ENGINE BREATHER CAP AND CAN PIERCER

Ronald R. Elder, Eugene, Oreg.

Filed May 30, 1972, Ser. No. 258,093
Int. Cl. F01m 1/04
U.S. Cl. 184—105 R 6 Claims



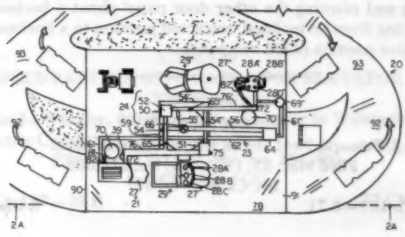
A combination breather cap and oil can piercer device for use on automotive engines for replacement of existing breather caps. A collapsible sleeve and plate attached thereto guide a manually held oil can into opening contact with a stationary piercer element normally shrouded by the extended sleeve. Closure means normally seals the lower end of the tubular piercer element to prevent engine entry of foreign objects while a removable cap closes off the internal sleeve area to prevent the deposit of dirt particles on the can piercing element. Normal breather cap functions are provided for which may include directing crankcase vapors into the fuel-air intake system.

3,774,723

FOOD AND FUEL DISPENSING PROCESSES AND STRUCTURES THEREFOR

James A. Johnston, 3318 Otsego, Amarillo, Tex.

Filed Dec. 13, 1971, Ser. No. 207,046
Int. Cl. E04h 3/04
U.S. Cl. 186—1 C 24 Claims



A cooperating set of systems and structures, i.e., a fuel supplying and dispensing system and structure, a food preparation and dispensing system and structure, and an air and gas removal system and structure combined with an air and aroma dispensing system, are arranged so that time required to add gasoline to each of several automobiles and perform related sales and service is used, in combination with positive olfactory and positive visual stimuli and blocking of negative olfactory stimuli, to increase the appetite of the passengers of such automobile for the food products sold at the same installation.

3,774,724

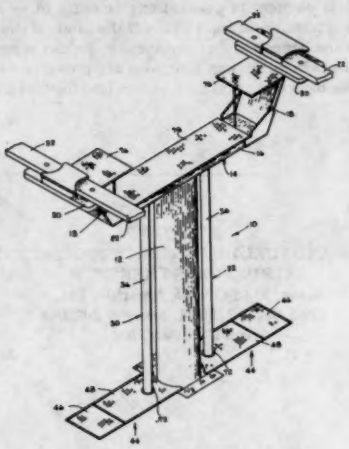
SAFETY DOOR ASSEMBLY FOR VEHICLE LIFT

Victor John Feudale, South San Francisco, Calif., assignor to J. D. Cochin Manufacturing Company, South San Francisco, Calif.

Filed Apr. 28, 1972, Ser. No. 248,688
Int. Cl. B66f 7/18
U.S. Cl. 187—8.62 13 Claims

An improved safety door unit for covering the open top of a lift floor box when the lift is elevated. The unit includes a pair of articulated door panels on each side of the lift shaft. A nonrotator carried by the lift for each pair of door panels, respectively, engages one door panel of the corresponding pair to

raise it from a horizontal retracted position to a horizontal operative position, and the one panel has a projection for engaging and pivoting the other door panel about a horizontal hinge line from an inclined, retracted position to a horizontal, operative position of the one panel.



3,774,725

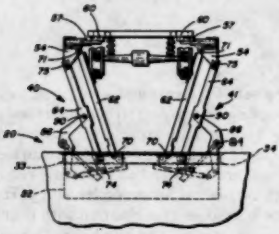
VEHICLE LIFT

James J. Pelouch, 7041 Hilton Rd., Brecksville, Ohio

Filed Mar. 22, 1971, Ser. No. 126,606

Int. Cl. B66f 7/08

U.S. Cl. 187—8.71 **8 Claims**



A vehicle lift is provided which is capable of being contained in a very shallow recess in a ground opening or other place of installation. This advantage is accomplished by means of a generally elongated box-like housing which has an open upper end which housing serves to contain first and second lifting assemblies located side by side and operating on generally opposite sides of the position of a vehicle to be lifted. Each of the lifting assemblies comprises a pair of horizontally extending tracks which are located just below the upper open end of the housing. A wheeled dolly is mounted between each pair of tracks for travel between first and second positions in a horizontal direction in moving the lift which includes the lifting assembly, between lower and upper positions. Each of the lifting assemblies also includes a mounting support which serves to connect and mount first and second horizontally swingable and longitudinally extendable arms, each of which carries vehicle engaging pad means thereon which pad means are normally adapted to engage the frame of a vehicle to be raised and lowered. An upper and a lower connecting arm member is provided, each of which has first and second end portions and these arm members serve to connect the wheeled dolly to its mounting support so as to raise and lower the mounting support with its swingable arms which in turn serve to raise and lower the vehicle. The first and second end portions of the upper arm are pivotally connected respectively to the wheeled dolly and to the mounting support and the first and second end portions of the lower arm are pivotally connected respectively to the wheeled dolly and the mounting support. Imaginary lines drawn through the pivotal connections of the upper and lower arms serve to define the geometric configuration of a parallelogram which configuration is defined at all positions of the lifting assembly. Motive power means are provided for moving each of the lifting assemblies from the aforementioned lower to upper positions and the wheeled dollies from their first to their second positions. The motive power means for each of the lifting assemblies comprises a hydraulic cylinder which cylinder is provided with a piston and a piston rod. Pivot means pivotally connect one end of each of the cylinders to the housing. A link member is provided and cooperates with each hydraulic cylinder and the link member has one end portion pivotally connected to the housing and has the other end portion pivotally connected to the lower arm between its first and second end portions. The piston rod is pivotally connected to the link member between its first and second end portions. Means are provided for mechanically connecting the first and second lifting assemblies together to assure that they move vertically together in their movement between the upper and lower positions. This means comprises first and second intermeshing gear segments which are pivotally connected to the housing and first and second connecting members pivotally connected at one of their ends to the housing and pivotally connected at their other ends to a respective gear segment. First and second door members are pivotally connected to the upper open end of the housing and act to cover the first and second lifting assemblies respectively in their lower positions and also act to cover the opening in the housing in the upper position of the lifting assemblies. Accidental lowering of the lifting assemblies is prevented as disclosed in the specification by engagement of a door member with the upper arm of a lifting assembly.

3,774,726

SAFETY SYSTEM FOR A LIFT TRUCK

Stig G. D. Bredberg, Mjolby, Sweden, assignor to AB Bygg-Och Transportekonomi (BT), Sweden

Filed June 29, 1971, Ser. No. 157,983

Claims priority, application Sweden, July 1, 1970, 9101/70

Int. Cl. B66b 9/20

U.S. Cl. 187—9 **2 Claims**

A safety system for a lift truck wherein the hydraulic pressure and thus the load capacity of the truck is automatically

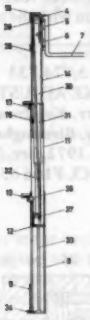
changed as a function of the position of the load carriage above the ground level. The safety system include pressure limiting valves which are controlled by the load carriage during its movement up and down the truck mast.

3,774,727

LIFT TRUCKS HAVING A THREE-STAGE LIFT MAST

Karl E. Berkestad, Mjolby, Sweden, assignor to AB Bygg-Och Transportekronomi, Mjolby, Sweden

Filed Aug. 25, 1971, Ser. No. 174,784
Int. Cl. B66b 9/20
U.S. Cl. 187—9 2 Claims



A lift truck having a three-stage lift mast comprising three mast sections, each such section including two uprights positioned at a horizontal distance from each other, has the two uprights of an outer section secured to the chassis of the truck and U-shaped with the U-openings facing each other. An intermediate and an inner section, the latter one provided with a load carriage, are telescopically displaceable in said outer section. On each upright of the intermediate section and inside the flanges of the uprights of the outer section are two vertical rows of guide rolls in the same vertical plane. The running surfaces of the rolls of the first row are outwardly in engagement with the inner side of the first flange of the upright of the outer section and the running surfaces of the rolls of the second row are outwardly in engagement with the inner side of the second flange of the same upright, whereas the running surfaces of the rolls of both rows at the same time are inwardly in engagement with the outer sides of a flange, belonging to the upright of the inner section and inserted between the two rows of rolls. The purpose is to make the horizontal extension of the mast perpendicular to the drive direction of the truck as small as possible.

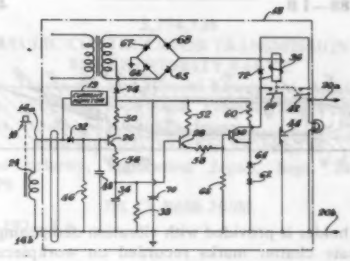
3,774,728

ELEVATOR CALL CIRCUIT

Albert Metzler, Arlington Heights; William W. Wright, Wheaton; John J. Rowell, Glenview, and Richard L. Collette, Hoffman Estates, all of Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed May 10, 1972, Ser. No. 252,338
Int. Cl. B66b 1/46
U.S. Cl. 187—29 R 19 Claims

A control system for elevators or the like wherein the elevator call button generates a first signal which is in turn sensed by the control circuit. The control circuit then provides a second signal of greater duration than the first. The second signal is utilized to produce energization of a relay which in turn controls the operation of the elevator motor and related equipment. A threshold device prevents operation of the relay when the first signal is below a threshold level so as to prevent accidental operation of the elevator by low level spurious signals. All of the control circuitry may be positioned remote from the signal generator in a safe environment. Additionally, short circuiting of the leads from the signal generator will not initiate operation of the elevator.



3,774,729

SPEED PATTERN GENERATOR FOR ELEVATOR SYSTEMS

Charles L. Winkler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1972, Ser. No. 254,006
Int. Cl. B66b 1/30
U.S. Cl. 187—29 R 17 Claims

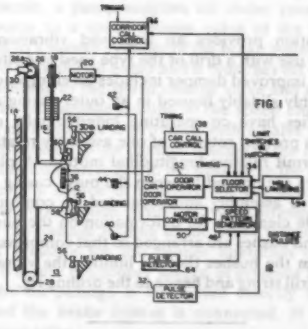


FIG. 1

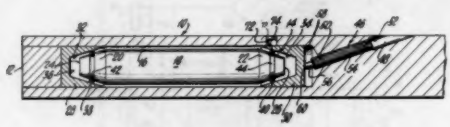
A speed pattern generator for elevator control which provides a time dependent speed reference pattern, with control over maximum jerk directly incorporated into the pattern itself. The speed pattern is developed by starting with a step signal whose two magnitudes determine maximum jerk. The specific magnitude of the step signal which is selected, and time spent at each magnitude of the step signal is determined by acceleration and speed feedback circuits. The step or jerk signal is integrated to provide an acceleration signal, and the acceleration signal is integrated to provide a speed pattern signal which, regardless of how fast the elevator system responds thereto, positively limits the maximum jerk.

3,774,730

TOOL HOLDER

Kenneth Carl Maddux, Cincinnati, Ohio, assignor to NL Industries, Inc., New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,329
Int. Cl. F16f 7/10
U.S. Cl. 188—1 B 4 Claims



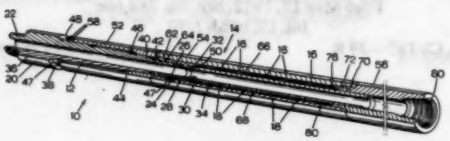
A tool holder is provided with vibration dampening means to eliminate chatter marks recorded on workpieces by a cutting tool attached thereto. The vibration dampening characteristics are provided by a high density member located within a longitudinal cavity in the tool holder. The dampening element moves in a direction which counters the normal resonant frequency cutting vibrations generated in the tool holder.

3,774,731

VIBRATION DAMPER

Donald L. Zerb, Edmonton, Alberta, Canada, assignor to William M. Varty, Edmonton, Alberta, Canada, part interest

Continuation of Ser. No. 154,578, June 18, 1971. This application Sept. 19, 1972, Ser. No. 290,407
Int. Cl. F16f 7/00
U.S. Cl. 188—1 B 11 Claims



The invention provides an improved vibration damper primarily for use with a drill of the type used in drilling for oil and gas. The improved damper includes an elongated metallic sleeve assembly slidably housed in an outer casing assembly. The assemblies have co-operating longitudinally extending splines which prevent rotation of one assembly relative to the other but permit relative longitudinal motion. A plurality of rubber bushes are housed between the outer casing assembly and the sleeve assembly and separated by contoured rings which provide clearance for deformation on the bushes. The assemblies and bushes are arranged so that compressive shock forces deform the bushes thereby limiting the vibrations applied to the drill string and hence to the drilling rig.

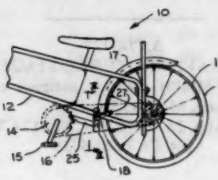
3,774,732

SPROCKET-ACTUATED BICYCLE BRAKE

Charles Basek, Granby, Quebec, Canada, assignor to Raleigh Industries of Canada Limited, les industries Raleigh Du Canada Limited, Waterloo, Quebec, Canada

Filed Apr. 25, 1972, Ser. No. 247,382
Int. Cl. B62l 5/00
U.S. Cl. 188—24 8 Claims

A forwardly and rearwardly movable brake member is pivoted to a bicycle frame and includes a brake shoe portion which frictionally engages the rear wheel when the brake member is moved rearwardly. An elongated pawl is pivoted to the brake member and extends forwardly to engage the teeth of a pedal-actuated sprocket which is drivingly connected to the rear wheel. During forward motion the pawl skips over the sprocket teeth, but when the sprocket rotation is reversed, the pawl moves the brake member rearwardly to frictionally engage the brake shoe portion with the rear wheel.

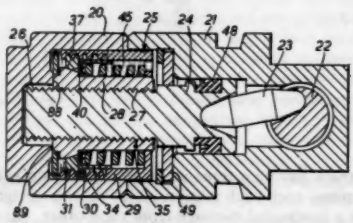


3,774,733

BRAKE ADJUSTERS

Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Tyseley, Birmingham, England

Filed Aug. 7, 1972, Ser. No. 278,355
Int. Cl. F16d 65/56
U.S. Cl. 188—196 D 23 Claims



An encapsulated slack adjuster mechanism for a vehicle brake comprises an encapsulating container in which are disposed a nut having a non-reversible internal thread, an annulus encircling the nut, a reversible screwthread connection and cooperating friction surfaces. The reversible screw thread connection is between the annulus and the container or between the annulus and the nut whilst the friction surfaces are between the annulus and the nut or between the annulus and the container, respectively. A first spring acts on the annulus to urge the friction surfaces towards one another. A second spring acts on the second member and urges the latter into engagement by an abutment surface with a complementary non-rotatable abutment surface which may be on the container when the brake is not applied to avoid the nut turning when this is not desired. The first spring is in the container but the second spring may be within the container or may be external thereto. In the latter case the second spring can be a brake return spring.

3,774,734

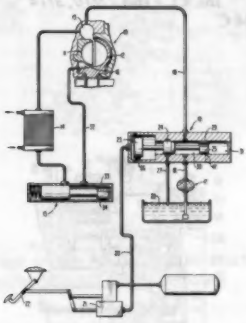
HYDRODYNAMIC BRAKE FOR VEHICLES, ESPECIALLY MOTOR VEHICLES

Hans-Joachim M. Forster, Stuttgart; Wolfgang Zaiser, Althutte (Wurtt); Hans Hanke, and Friedrich Bultmann, both of Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellshaft, Stuttgart-Untertuerkheim, Germany

Filed Apr. 16, 1971, Ser. No. 134,641
Claims priority, application Germany, Apr. 18, 1970, P 20 18 652.1
Int. Cl. F16d 57/02
U.S. Cl. 188—296 22 Claims

A hydrodynamic brake for vehicles, especially for motor vehicles with at least one fixed blade wheel and one rotating

blade wheel rotating with the drive of the vehicle, in which a filling pump for filling the hydrodynamic working circulatory system rotates also constantly with the drive; the filling pump is adapted to be connected by way of a regulating valve either with the oil sump or with the outlet of the hydrodynamic brake and the pressure is thereby automatically controllable cor-



responding to the pressure in the brake circuit of the vehicle; a closure valve is also associated with the brake which opens up the external circulatory sysem of the hydrodynamic brake only above a predetermined pressure at the inlet or outlet of the hydrodynamic brake and closes the same below the predetermined value.

3,774,735

HYDRODYNAMIC RETARDER FOR VEHICLES

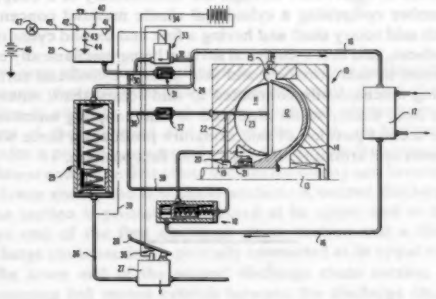
Hans Hanke, and Wolfgang Peter, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft

Filed Jan. 17, 1972, Ser. No. 218,222

Claims priority, application Germany, Jan. 16, 1971, P 21 02 078.0

Int. Cl. F16d *57/02*

U.S. Cl. 188—296 **31 Claims**



A hydrodynamic retarder for vehicles, especially motor vehicles which includes an internal working circulation between a rotating and a stationary bladed wheel within a working space and an external cooling circulation with a by-pass valve; the filling of the working circulation takes place from a filling cylinder actuated by pressure medium and controlled by a control valve, for example by the brake pedal; the sealed space located directly in front of the shaft seal within the retarder housing is relieved toward a place of the working circulation that is pressureless during operation while a supply tank for working liquid is provided which is connected with the cooling circulation by way of a first check valve that opens in the direction toward the cooling circulation and with the relief line, connecting the space in front of the shaft seal with the working space, by way of a second check valve which closes in the direction toward the relief line.

3,774,736

HYDRAULIC CONTROLS FOR TRANSMISSION WITH BRAKE PRIORITY VALVE

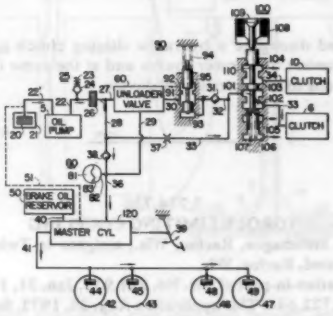
Shin Ito, Toyota-shi, and Hiroshi Kawaguchi, Aichi, both of Japan, assignors to Toyota Vidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Sept. 22, 1971, Ser. No. 182,736

Claims priority, application Japan, Sept. 24, 1970, 45/82979

Int. Cl. B60k *29/00*

U.S. Cl. 192—4 A **1 Claim**



In a vehicle having a transmission system and a brake system for providing a double braking force, a hydraulic brake control circuit is arranged for interconnecting both the transmission system and the brake system. In the hydraulic brake control circuit, a pump supplies oil under pressure from a supply source to a speed change valve of the transmission system and to a master cylinder of the brake system. A passage is provided from the oil pump and it branches off into separate passages leading to the speed change valve and to the master cylinder. In the passage leading to the speed change valve, a further branch passage is provided with a valve arrangement which is connected to the passage leading to the brake system. An accumulator is arranged in the passage to the brake system for affording a source of pressure for the doubled braking force in the brake system. A priority valve arrangement is connected to the passage leading to the brake system to assure a source of pressure for the proper operation of the brake system. To assure the proper source of pressure for the brake system, the oil passage is connected directly to the brake system and the brake system is connected, in turn, to the speed change valve.

3,774,737

HAULAGE MECHANISM FOR MINING MACHINES

Forrest Symington Anderson, Lanarkshire, Scotland, assignor to Anderson Mavor Limited, Lanarkshire, Scotland

Filed Aug. 20, 1971, Ser. No. 173,483

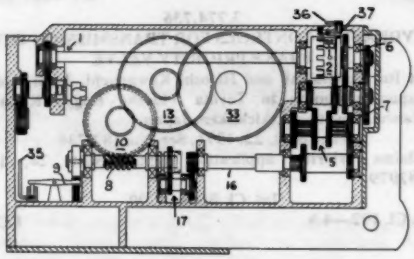
Claims priority, application Great Britain, Sept. 1, 1970, 41,773/70

Int. Cl. F16d *67/00*

U.S. Cl. 192—56 F **9 Claims**

The invention relates to overload cut-out mechanism for mechanical haulage mechanism for mining machines in which the cut-out mechanism comprises a friction clutch device driven by a worm wheel device and operable when a driven

member and driving member of the clutch device is overloaded and rotate relative to one another to actuate a hydraulic system to release spring pressure means on the clutch



plates, and disengage a hydraulic driving clutch connecting the mechanism to a power source and at the same time apply brake means to the worm wheel device.

3,774,738

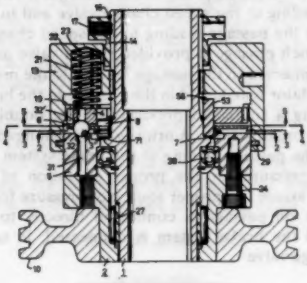
TORQUE LIMITING COUPLING

Horst G. Steinhagen, Racine, Wis., assignor to Twin Disc Incorporated, Racine, Wis.

Continuation-in-part of Ser. No. 221,935, Jan. 31, 1972, Pat. No. 3,722,644. This application Aug. 24, 1972, Ser. No. 283,414

Int. Cl. F16d *43/20*

U.S. Cl. 192—56 R **10 Claims**



A torque input shaft and a torque output hub are coaxially connected for relative rotation in axially fixed relation to each other. Caged coupling ball and spacing key assemblies are arranged between the hub and an axially shiftable, spring loaded coupling plate on the input shaft to provide for disengagement of the coupling under overload and for resetting upon reverse rotation of the shaft relative to the hub. Ball pockets in the hub and coupling plate are irregularly pitched to provide for single position engagement.

3,774,739

MAGNETIC CLUTCH

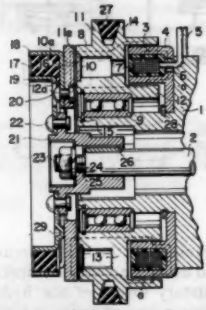
Hideo Higuchi, Aichi-ken, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Mar. 30, 1972, Ser. No. 240,877

Claims priority, application Japan, Apr. 9, 1971, 46/27195; June 11, 1971, 46/49861; Aug. 9, 1971, 46/71249; Dec. 17, 1971, 46/119683; Jan. 20, 1972, 47/9153

Int. Cl. F16d *27/10, 3/14*

U.S. Cl. 192—84 C **16 Claims**



A magnetic clutch comprising a main rotating unit rotated from a driving source, a rotary shaft concentric with said main rotating unit and rotatable independent thereof and adapted to be connected to a driven member, an armature mechanically connected to said rotary shaft and placed opposite to said main rotating unit in the axial direction, said armature being movable in the axial direction to a first position separated from said main rotating unit by a predetermined distance and to a second position engageable with said main rotating unit to rotate therewith, and magnetic means for attracting said armature from the first position to the second position, wherein said armature and rotary shaft are connected to each other through the intermediary of a coupling member comprising a cylindrical elastic material concentric with said rotary shaft and having a first and second cylindrical surfaces, said first cylindrical surface being mechanically connected to said armature and said second cylindrical surface being mechanically connected to said rotary shaft, whereby the axial elastic strain produced in said coupling member at the second position of said armature produces a force which causes said armature to return to the first position.

3,774,740

INTERLOCKING DEVICE FOR PRESSES AND TRANSFERFEEDERS

Ichiro Kubota, Ishikawa-ken, Komatsu-shi, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed July 9, 1971, Ser. No. 161,131

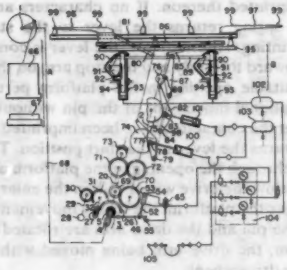
Claims priority, application Japan, July 15, 1970, 45/61502

Int. Cl. F16p *7/02;* **F16d** *67/04, 71/00*

U.S. Cl. 192—150 **3 Claims**

In a press line including presses and transferfeeders provided between said presses, an interlocking device has the function such that if any over-load should be caused while said presses and transferfeeders are being interlocked and

synchronously driven through a transmission driving system, the interlocking movement is simultaneously shut off,



whereby breakage of the whole relative machineries can be prevented and safety thereof can be secured.

3,774,741

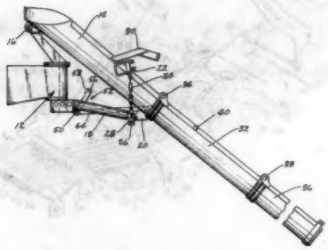
POWER CHUTE RACKING DEVICE THEREFOR

James E. Johnson, Waterloo, Iowa, assignor to Construction Machinery Company, Black Hawk County, Iowa

Filed Sept. 11, 1972, Ser. No. 287,673

Int. Cl. B65g 11/00

U.S. Cl. 193—10 **9 Claims**



A power chute racking device is disclosed for racking the discharge chute sections of a concrete mix truck. A first chute section is pivotally secured to the discharge chute support means at the rearward end of the mix truck. A hydraulic cylinder is pivotally connected to the chute support means and the lower end of the first chute section for raising and lowering the lower end of the first chute section. A second discharge chute section is pivotally connected at its upper end to the lower end of the first discharge chute section and a third discharge chute section is pivotally connected at its upper end to the lower end of the second discharge chute section. A telescoping link means extends between the discharge chute support means and the upper end of the second discharge chute section. The telescoping link means comprises a first link member pivotally secured at one end thereof to the discharge chute support means and having its other end slidably received by one end of a second link member which is pivotally secured to the second discharge chute member. The telescoping link means also comprises a link stop which is moveable into engagement with the second link member to limit the inward slidable movement of the first link member into the second link member at times. The chute sections are racked by first pivotally folding the third chute section over on top of the second chute section. The hydraulic cylinder is then extended so that the link stop can be engaged. After the link stop has been engaged, the hydraulic cylinder is retracted so that the telescoping link means causes the second discharge chute section, and the third discharge chute section folded thereon, to be folded over on top of the first discharge chute section. The discharge chute sections can be lowered by reversing the procedure outlined above.

3,774,742

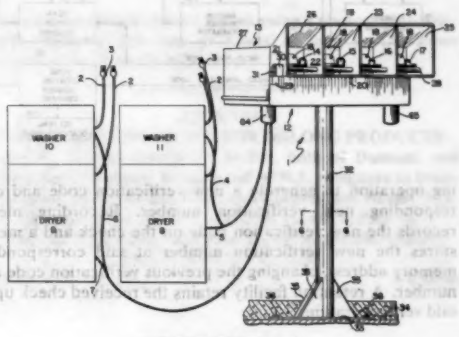
COIN OPERATED WASHER-DRYER CONTROL MODULE

George Magnanelli, Bethesda, Md., assignor to Consoles Unlimited, Inc., Silver Spring, Md.

Filed Mar. 27, 1972, Ser. No. 238,288

Int. Cl. G07f 9/00

U.S. Cl. 194—1 **10 Claims**



To prevent damage to coin operated laundry appliances, such as washers and dryers, by vandals attempting to obtain access to the coin storage area, a coin operated control module is provided completely separate from the laundry appliances and rigidly fabricated from welded steel plate so as to have a rectangular base with three vertical side walls and a rectangular housing portion with three overlapping vertical side walls being secured to the base along the fourth side by hinge means. Threaded fasteners are used to maintain the housing portion and base in its closed position and are accessible only upon removal of a security lock. Conventional manual coin slides are provided solely in the housing portion along with coin storage means to be pivoted away from the base, which carries the timers when access is desired for maintenance purposes, but the coin storage area is separately locked from access by maintenance personnel. The overlapping walls are reinforced along their respective outer edges, hoods are provided around each of the coin slides for their protection, and a removable security locked bar is provided transversely underneath the outermost ends of each of the cantilevered coin slides to normally prevent their damage, but removable for maintenance purposes. A pedestal mount employs a floor plate embedded in concrete and a pipe extending upwardly, with concrete and reinforcing rods within the pipe to resist cutting by sawing, a torch, or the like.

3,774,743

CHANGEABLE VERIFICATION CHECK CONTROLLED VENDING

William W. Hendrickson, St. Louis City, Mo., assignor to UMC Industries, Inc., St. Louis, Mo.

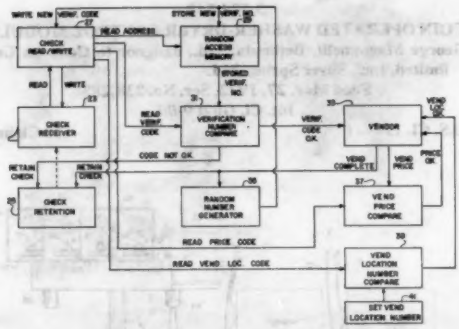
Filed July 12, 1972, Ser. No. 271,213

Int. Cl. G07f 7/02

U.S. Cl. 194—4 C **12 Claims**

A vending system and method wherein check-receiver means receives a check having a memory address code and changeable verification code, both of which may be magneti-

cally encoded in stripe format. A code reader reads the codes of a received card. Code-comparing means compares the read verification code with a number stored in a memory at a memory address corresponding to the read address code. If the comparison is correct, a vend means effects a vend operation. A random number generator is operative upon said vend-



ing operation to generate a new verification code and corresponding new verification number. Recording means records the new verification code on the check and a means stores the new verification number at said corresponding memory address, changing the previous verification code and number. A retention facility retains the received check upon said vend operation.

3,774,744

MANUAL LABELING DEVICE

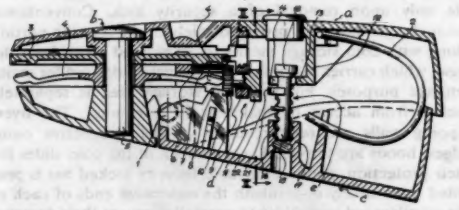
Francisco Barcelloni Corte, Garin, Argentina

Continuation-in-part of Ser. No. 173,456, Aug. 20, 1971, Pat. No. 3,704,771. This application Sept. 11, 1972, Ser. No. 287,984

Claims priority, application Argentina, Jan. 25, 1972, 240,220

Int. Cl. B41j *1/30*

U.S. Cl. 197—6.7 **6 Claims**



A device for imprinting characters on a belt or the like. A body and a lever are pivotally connected with a spring normally urging them apart. A pair of closely positioned rotary character imprinting members, carried on the body, receive the belt therebetween, the belt having the characters imprinted thereon by pressing the rotary members together. Means are provided for guiding the belt between the rotary members for the imprinting operation. One wheel engages the belt to drive it in response to the rotation of a drive wheel. The drive wheel is rotated after the body and lever have been moved or pressed together. A pin is rotatably and threadably received in the lever and has an enlarged upper head with an arm which operatively engages the drive wheel. When the lever and body are pressed together, the pin initially moves together with the lever. A platform is mounted on the body and movably receives the pin. When an appendage or stop element on the pin engages the belt after a selected translational movement of the pin has occurred, the stopping of the translational movement of the pin rotates the pin causing the arm to drive the drive wheel and thereby move the wheel which engages the belt to move the same a distance for having a character imprinted thereon. If no characters are to be imprinted, the spring returns the lever to the start position without imprinting. Alternatively, the lever is continued in its movement toward the body and the stop arm on the pin passes through a suitable opening in the platform permitting continued translational movement of the pin without rotation of the arm. After the characters have been imprinted by pressing, the spring returns the lever to the start position. The stop arm passes down through the opening in the platform and the drive arm moves below the drive wheel. When the enlarged head on the pin engages the platform, the rotary movement once again occurs and the pin and the drive arm are rotated back to the initial position, the drive arm being moved without engagement with the drive wheel.

3,774,745

APPARATUS FOR ADJUSTING THE IMPACT FORCE OF TYPES

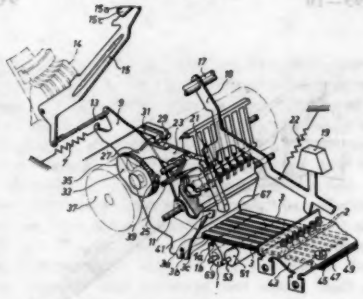
Hans Fuchs, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmhaven, Germany

Filed June 3, 1971, Ser. No. 149,438

Claims priority, application Germany, June 13, 1970, P 20 29 332.7

Int. Cl. B41j *23/08*

U.S. Cl. 197—17 **7 Claims**



A control bar extending across the type actions of an electric typewriter, has a lowercase abutment and an uppercase abutment which are placed in an operative position, respectively, by the case shift key for differently limiting the free inertia movement of a driven lever, and thereby the impact force of the type faces, either by setting a stop spring engaged by the driven lever at the end of its inertia movement, or by effecting separation of the coupling means of the driven lever from the power roll for determining the moment in which the inertia movement of the driven lever with the type bar starts.

3,774,746

CONVEYOR WITH ROCKING UNITS TO ROLL ROUND ARTICLES

Paul F. Paddock, Riverside, Calif., assignor to Sunkist Growers, Inc., Sherman Oaks, Calif.

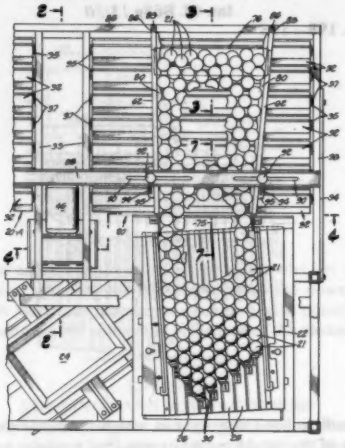
Filed Apr. 8, 1971, Ser. No. 132,444

Int. Cl. B65g *47/26*

U.S. Cl. 198—30 **40 Claims**

Round articles are rolled in stages by a series of conveyor units arranged edge to edge that rock about axes perpendicular to the direction of travel. The conveyor units are rocked synchronously between rearward and forward positions and the conveyor units are formed with seats adjacent their back edges to receive new articles on each cycle.

A given round article that rolls onto the seat of a conveyor unit when the unit is in its rearward position rolls forward on the unit as the unit rocks to its forward position. Then as the



unit rocks back to its rearward article-receiving position, the given article is boosted onto the seat of the next forward conveyor unit. Thus, normally all of the articles on the conveyor advance by one conveyor unit on each cycle.

3,774,747

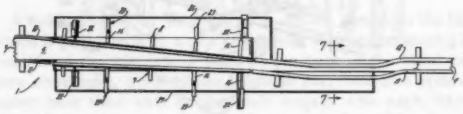
COMBINING CONVEYOR ARRANGEMENT FOR ARTICLES SUCH AS CANS

Neal F. Hetchler, Milwaukee, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed May 3, 1971, Ser. No. 139,367

Int. Cl. B65g 47/26

U.S. Cl. 198—32 **3 Claims**



The disclosure provides for at least one of the opposed side rail guides of the combining conveyor arrangement being resiliently supported to provide for movement of the side rail guide primarily in response to the pressure of the articles advancing on the combining path. The disclosed combining conveyor arrangement further provides for automatic ejection or removal of fallen articles from the combining path.

3,774,748

MERGING CONVEYOR

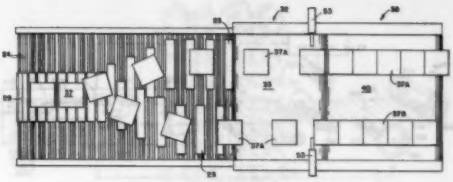
Robert R. Dederer, Kingsland Road, and Frank B. Vanderhoof, Lake Hopatcong, both of N.J., assignors to The Metromatic Corporation, Landing, N.J.

Filed June 8, 1972, Ser. No. 260,763

Int. Cl. B65g 47/24

U.S. Cl. 198—32 **4 Claims**

A conveyor assembly which receives two lines of adjoining boxes, then separates the boxes in spaced relation, and finally combines the two lines into a single line by alternate interposition. Boxes having the same size may be combined by a mechanical control. Boxes of varying sizes may be combined



by a cross-connected control means using a photosensitive detector, stopping one line of boxes as long as the other photosensitive detector is blocked.

3,774,749

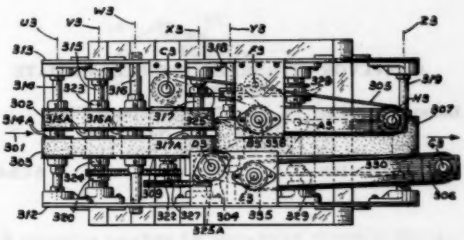
CONVEYING APPARATUS FOR OBLONG PRODUCTS

Hubert E. Tobey; George O. Moller, both of Dumont, and Richard L. Twiford, Teaneck, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Division of Ser. No. 105,446, Jan. 11, 1971, Pat. No. 3,695,411. This application Aug. 11, 1972, Ser. No. 280,027

Int. Cl. B65g 47/24, 15/00

U.S. Cl. 198—33 AB **4 Claims**



Conveying apparatus for receiving oblong products positioned with their axis in a direction perpendicular to the conveying direction and for turning the products so that their long axis is in line with the conveying direction. The apparatus includes a pair of parallel and unequal speed belts cooperating to cause initial turning of the oblong product, and with the aid of a turning roller and angled belt opposite the roller, the complete turn-around of the product so that it moves with its long axis in the conveying direction.

3,774,750

AUTOMATIC VENEER MEASURING AND CLIPPING CONTROL SYSTEM

Ernest H. Streckert, 609 North Rd., Medford, Wis.

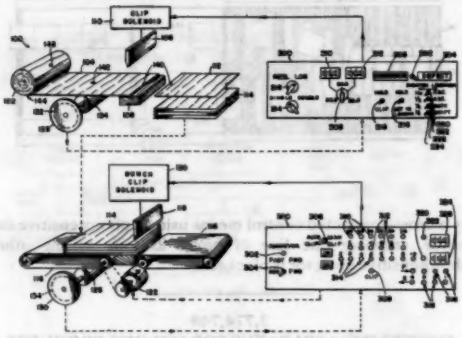
Division of Ser. No. 885,917, Dec. 17, 1969, Pat. No. 3,670,614. This application Feb. 4, 1972, Ser. No. 223,211

Int. Cl. B65g 21/12

U.S. Cl. 198—110 **5 Claims**

A veneer stack or bunch slipper electronically measures and clips a stack of veneer into sections of the proper width. A plurality of manually actuatable switches are provided each of which corresponds to a different panel width or to a different number of panel sections which are to be cut for assembly into a single panel of a standard width. When one of these switches is actuated, current flow through the switch and through a se-

ries of diodes into selected inputs of a buffer or other data storage device causes a record to be stored within the storage



device of how wide the next cut section is to be. Automated conveying, measuring, and clipping mechanisms then measure and clip the stack in accordance with the stored record.

3,774,751

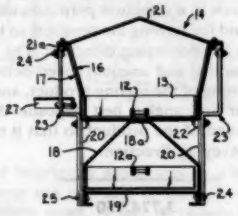
CONVEYOR WITH SELECTIVE INTERMEDIATE DROPOUT

Donavon L. Bakker, Rt. 1-Box 7, Fort Atkinson, Wis.

Filed Oct. 24, 1972, Ser. No. 300,107

Int. Cl. A01k *5/00*; **B65g** *15/60*, *19/08*

U.S. Cl. 198—169 **6 Claims**



A conveyor trough is provided with a longitudinally slidable intermediate section which, when moved to the open condition, permits conveyed material to drop out of the conveyor trough. The return flight of the conveyor is protected from the dropped-out material. Means provided for releasably locking the intermediate section in the closed condition as well as in the open condition.

3,774,752

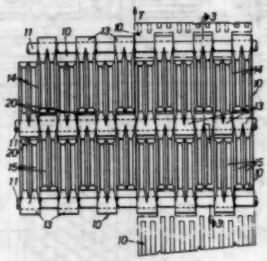
ENDLESS BAND CONVEYORS

George Arthur Harvey, 23 Wannerton Road, Blakedown, England

Filed Nov. 16, 1971, Ser. No. 199,165

Int. Cl. B65g *15/30*

U.S. Cl. 198—195 **8 Claims**



An endless band conveyor in which the load-bearing components of the band are cast or moulded modules each having a generally tabular, grating-like structure with portions at opposite sides at which the modules are hingedly connected to spaced transverse rod members of the band.

3,774,753

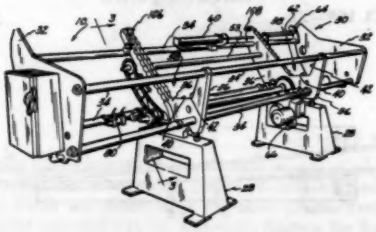
BUNDLE FEED DEVICE

Otis V. Jones, Jr., 18530 Weaver, Apt. 202A, Detroit, Mich.

Filed Mar. 27, 1972, Ser. No. 238,094

Int. Cl. B65g *25/04*

U.S. Cl. 198—219 **7 Claims**



A device for feeding elongated bars or the like singly and in proper orientation from a plurality or a bundle of such bars to a stock feeding apparatus employed as a means for loading bar stock into conventional multiple or single spindle metal working machines. The loading device includes longitudinally spaced inclined walking beams operable to move the bars up a ramp and means for sensing misalignment of the bars and for stopping one of the walking beams until the other walking beam has moved the bar into an aligned position.

3,774,754

MATERIAL HANDLING APPARATUS

Junior M. Hedlund, P.O. Box 316, Boyceville, Wis.

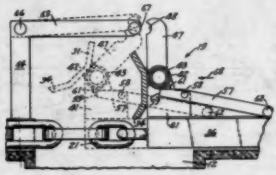
Filed May 22, 1972, Ser. No. 255,404

Int. Cl. B65g *25/08*

U.S. Cl. 198—224 **19 Claims**

A cleaner having a drag blade movable along an alley of a free stall barn to scrape waste materials and liquids from the alley into a gutter located at one end of the alley. A cocking

member at the gutter end of the alley raises the blade to its up or raised position. The blade is held with a lock arm in the raised position as the blade returns to its start position. The



lock arm is automatically released when the cleaner is in the start position whereby the blade returns to the down scrape position. A timer operable in conjunction with position limit switches controls the sequential operation of the cleaner.

3,774,755

HOLDING BAND FOR FASTENERS

Adolf Cast, Oberlenningen, and Jorg M. Reich, Nurtingen, both of Germany, assignors to Karl M. Reich Maschinenfabrik, Nurtingen, Germany

Filed Apr. 28, 1971, Ser. No. 138,178

Claims priority, application Germany, May 6, 1970, P 20 22 136.7

Int. Cl. B65d *83/00*

U.S. Cl. 206—56 DF 16 Claims

A holding band for fasteners such as nails, screws or the like which is provided with a row of resilient tongues projecting in pairs from the two lateral sides of the back of the band and then converging toward each other so that their free ends or points near their ends substantially engage with each other. These free ends are provided with recesses of a width substantially in accordance with the diameter of the shank of a fastener so that, when a nail or screw is inserted between a pair of the tongues, the walls of these recesses will embrace and grip the shank. The back of the band is provided with a row of holes through each of which a drive rod or screw driver may be passed to act upon the head of a nail or screw. These holes have a size slightly smaller than the diameter of the heads of the nails or screws to prevent the latter from sliding therethrough.

3,774,756

MOLDED PLASTIC SNAP FASTENER FOR STRIP OF COMPONENTS THEREFORE

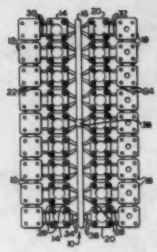
Alfred E. Carlile, and Bernard H. Cox, both of Meadville, Pa., assignors to Textron Inc., Providence, R.I.

Division of Ser. No. 868,544, Oct. 22, 1969, Pat. No. 3,685,105. This application Mar. 6, 1972, Ser. No. 232,070

Int. Cl. B65d *73/00*

U.S. Cl. 206—56 AB 4 Claims

A molded plastic snap fastener including a stud member having attaching legs for insertion in recesses in a backing member, a socket member having attaching legs for insertion in recesses in another identical backing member, and a strip of



the above components for forming a plurality of the snap fasteners.

3,774,757

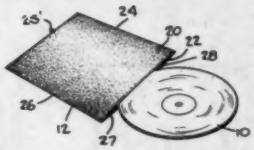
PROTECTIVE ENVELOPE FOR PHONOGRAPH RECORD

Stewart G. Harris, and Joseph B. Buzelmans, both of East Paterson, N.J., assignors to Hers Management Corp., East Paterson, N.J.

Filed Sept. 29, 1971, Ser. No. 184,712

Int. Cl. B65d *85/30*

U.S. Cl. 206—62 P 4 Claims



A protective envelope for phonograph records is disclosed which comprises a pair of electrostatically charged foamed synthetic polymer panels sealed together over less than their entire periphery and which protects the record and removes dust and dirt from the record as the record is removed therefrom.

3,774,758

METHOD AND AID FOR THE AUTOMATED SORTING OF MAIL BY ZIP CODE

Howard W. Sternberg, 100 Caton Ave., Brooklyn, N.Y.

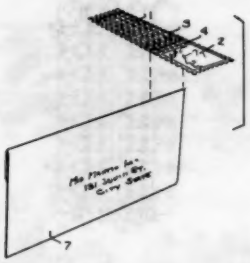
Filed Feb. 24, 1971, Ser. No. 118,219

Int. Cl. B07c *5/342*

U.S. Cl. 209—111.7 6 Claims

A method and aid for sorting the mail is disclosed wherein a series of five columns of sequentially arranged numbers from zero to nine are positioned at a predetermined location on an article to be mailed. The columns may be positioned on a strip of material which also has a stamp on it. The stamp and the columns are separated from each other by a line which is weakened to facilitate bending. This strip can then be properly positioned on the article by folding at the line and attaching to the envelope so that the stamp is on one surface of the article to be mailed and the columns on another. The sender marks

the appropriate number in each column corresponding to the equivalent digit in the zip code and at the post office auto-



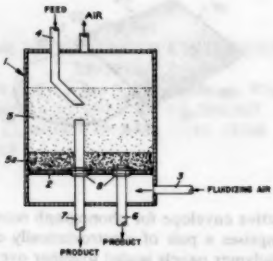
matic scanning and sorting devices read the markings and sort the mail accordingly.

3,774,759

SEPARATION OF PARTICULATE SOLIDS OF VARYING DENSITIES IN A FLUIDIZED BED

Murray Weintraub, and Albert W. Deurbrouck, both of Pittsburgh, Pa., assignors to the United States of America, as represented by the Secretary of the Interior

Filed Dec. 16, 1970, Ser. No. 98,509
Int. Cl. B03b *3/04*
U.S. Cl. 209—474 **2 Claims**



A particulate feedstock is separated into a light fraction and a heavy fraction by feeding it into a fluidized bed of particulate material whose particle size and specific gravity, relative to the particle sizes and specific gravities of said light and heavy fractions, are such that one of these fractions readily stratifies into an easily removable layer in the bed while the other fraction tends to remain intermixed with the bed material rather than stratifying. Said other fraction is removed as product from the bed while it is in said intermixed condition.

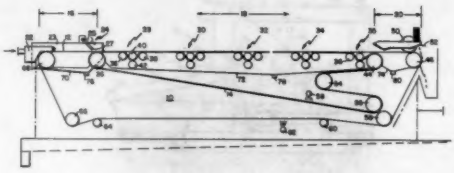
3,774,760

SLUDGE DEWATERING APPARATUS AND PROCESS

Charles D. Beristain; Barrie K. Nixon, and Robert J. Kiefer, all of Richmond, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 29, 1971, Ser. No. 184,675
Int. Cl. B01d *33/04*
U.S. Cl. 210—66 **9 Claims**

A process and apparatus for sludge dewatering including gravity screening and capillary dewatering wherein an endless belt of a screen-like material and an endless belt of a capillary material are selectively functionally utilized separately and in close proximity to effectuate the steps of the process including a repetitive dewatering of the belt as it becomes saturated. The repetitive dewatering step proceeds with the screen-like belt supporting the sludge while the capillary belt is separately compressed, or otherwise dewatered. The process and apparatus further includes a final sludge dewatering section wherein the screen-like belt and the capillary belt are similarly separated.

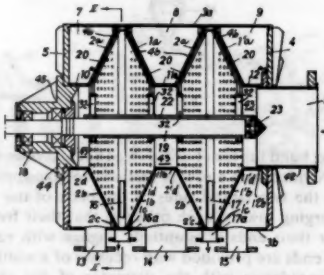


3,774,761

PROCESS AND APPARATUS FOR FILTERING CELLULOSE FIBER SUSPENSIONS

Anders Lennart Wikdahl, 42 Bravallavagen, Djursholm, Sweden

Filed Mar. 2, 1971, Ser. No. 120,228
Int. Cl. B01d *29/38*
U.S. Cl. 210—81 **17 Claims**



A process is provided for filtering cellulose fiber suspensions to separate from the fibers contaminant particles having large and small dimensions, such that they are capable if oriented with their small dimension in one direction of passing through the filter, but incapable of passing through the filter if oriented with their large dimension in such direction. The cellulose fiber suspension is caused to impinge upon a filter surface arranged in an angle within the range from about 2.5° to about 45° to the direction of flow of the fiber suspension, thus deflecting the flow, and forcing the particles to change direction before they can pass through the filter.

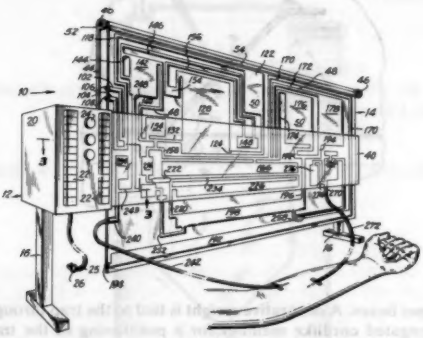
Apparatus also is provided for filtering such fiber suspensions, comprising a housing in which the filter surface is arranged at an angle within the range from about 2.5° to about 45° to the direction of flow of the fiber suspension through the housing from the inlet to the filtered fiber suspension outlet.

3,774,762

ANALOGUE FLUID FLOW PROGRAMMING STRUCTURES

Eric S. Lichtenstein, 24 E. 93rd St., New York, N.Y.

Filed Jan. 20, 1971, Ser. No. 108,118
Int. Cl. B01d 31/00
U.S. Cl. 210—94 17 Claims



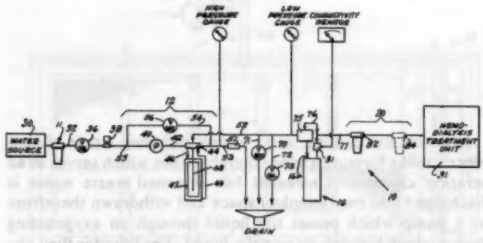
A semi-automatic device for peroforming complex fluid processing procedures adapted to hemodialysis. The structure includes a disposable component formed by layers of transparent, flexible plastic sheets, sealed to each other according to a predetermined pattern defining between each pair flow paths and pockets which respectively form fluid passages and reservoirs. The structure also includes a permanent installation which is to receive the disposable component in order to form therewith a complete apparatus for automatically processing fluids, such as treating or determining the characteristics of a fluid such as human blood, according to predetermined sequences which may be controlled by internal and/or external information processing devices.

3,774,763

WATER PURIFICATION SYSTEM

Charles E. Yall; Blair O. Bennett, both of Deerfield, and Lawrence Russell Hogan, Lake Villa, all of Ill., assignors to Culligan International Company, Northbrook, Ill.

Filed Oct. 15, 1970, Ser. No. 80,927
Int. Cl. B01d 31/00
U.S. Cl. 210—96 6 Claims



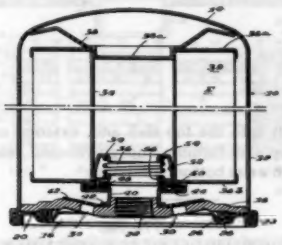
A high quality water purification system for providing water for use under near aseptic conditions such as in hemodialysis including an arrangement whereby water is purified by passing it respectively through a reverse osmosis bank, a deionizer, and at least one submicron filter in series, with means for insuring a constant flow of waste water to a drain from the outlet side of the reverse osmosis bank and means for by-passing water around the deionizer unit.

3,774,764

DISPOSABLE SPIN-ON TYPE OIL FILTERS

Jesse A. Baldwin, Kearney, Nebr., assignor to J. A. Baldwin Manufacturing Company, Kearney, Nebr.

Filed Mar. 5, 1971, Ser. No. 121,367
Int. Cl. B01d 27/00
U.S. Cl. 210—130 4 Claims



A disposable spin-on type oil filter incorporating an improved front-end bypass valve unit (also providing an annular seat for the filter element) characterized in that the valve element thereof comprises a planar annulus of rubber or rubber-like material having radial width substantially equal to the radial width of the adapter-bushing flange, and being disposed thereon and positively secured thereto along the full outer periphery of both, whereby the valve annulus in partaking of its seating and unseating movements merely flexes about its secured outer edge line. Combined with said front end bypass valve is an anti-drainback valve which preferably is fashioned as a rubber or rubber-like preform having the general configuration of an upright truncated cone and which is secured along its smaller-diameter end portion to the filter-element at about the junction of its bottom end cap and center tube by said bypass valve unit and which extends downwardly and outwardly therefrom by an amount such that its outer edge portion overhangs a complementally inclined sloped-surface provided on the inner surface of the filter base plate and presses against same.

3,774,765

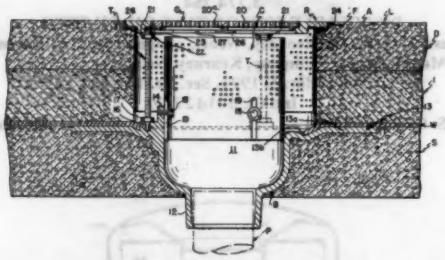
AREA DRAIN FOR A PROMENADE DECK OR LIKE ENVIRONMENT

James M. Kane; Albert H. Buehler, both of Shaker Heights, Ohio, and Earl G. Alix, Michigan City, Ind., assignors to The Tremco Manufacturing Company, Cleveland, Ohio by said Kane and said Buehler, and Joram Manufacturing Co., Michigan City, Ind. by said Alix

Continuation of Ser. No. 38,249, May 18, 1970, abandoned.
This application Sept. 9, 1971, Ser. No. 179,210
Int. Cl. E03f 1/00
U.S. Cl. 210—164 16 Claims

As an adjustable drain for promenade decks with a seepage-draining permeable layer, e.g., of gravel, between a waterproofed lower poured concrete structural slab and a finished top poured traffic slab, a bowl body embedded in the lower slab has a wide peripheral top flange affording a large sealing area with the overlying waterproofing layer, receives the lower end of a perforated cylindrical filter collar removably ad-

justably bolted therein, and supports, through three adjustable threaded rods spaced externally of the filter, a rim for a removable grate at the finish level. From the rim, anchors project obliquely into the top slab and, external of the rods, a transitory top slab-forming and gravel-sand retaining sleeve depends from a rim bottom formation.

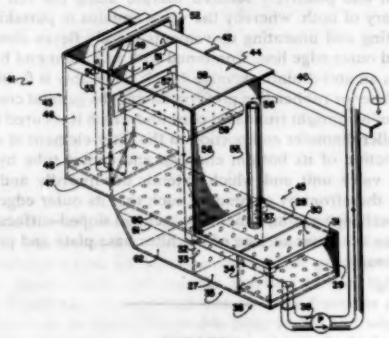


3,774,766

AQUARIUM FILTER ASSEMBLY

Herbert E. Brock, 121 Harper Ave., Winnipeg, Manitoba, Canada

Filed Nov. 11, 1971, Ser. No. 197,732
Int. Cl. E04h *3/20*; C02b *3/08*
U.S. Cl. 210—169 **5 Claims**



The filter assembly has at least two compartments, the first being provided with a drip pan feed and has an unsubmerged filter bed holding "rocksplit" upon which aerobic bacteria are situated. The drip pan controls the rate of flow through the filter bed.

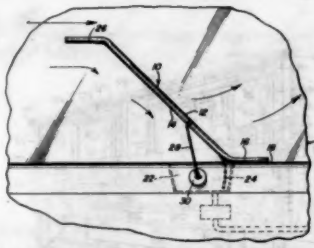
3,774,767

SKIMMER TRAP

Bernard H. Field, Santa Barbara, Calif.

Filed Nov. 30, 1971, Ser. No. 203,296
Int. Cl. E04h *3/20*; E02b *15/04*
U.S. Cl. 210—169 **2 Claims**

An elongated buoyant member having laterally angled inner and outer ends. A flat upstream face is provided by an elongated strip affixed to one side of the member and having an inner end angled outwardly from the angled inner end of the member. The strip is slightly flexible so as to vary the angle of the inner end for an accommodation of variously shaped skimmer boxes. A decorative weight is tied to the trap through an elongated cordlike member for a positioning of the trap and a clip-on auxiliary screen is provided to selectively give a greater operative depth to the trap.

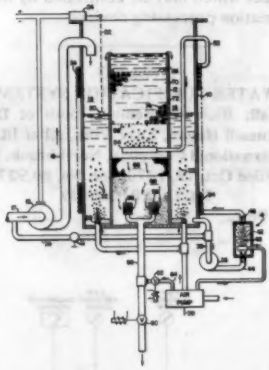


3,774,768

APPARATUS FOR TREATING INDUSTRIAL AND DOMESTIC WASTE WATERS

Abner B. Turner, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 16, 1972, Ser. No. 281,076
Int. Cl. C02c *1/02*
U.S. Cl. 210—199 **10 Claims**



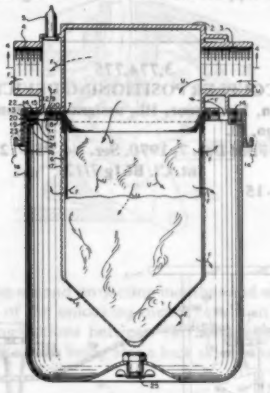
A system for treating waste waters including a pair of concentric tanks forming a space therebetween which serves as an aeration chamber. Untreated but screened waste water is discharged into the (annular) space and withdrawn therefrom by a pump which passes the liquid through an oxygenating device which induces air into the liquid. The liquid is then circulated through long tubing wound around the outside peripheral surface of the tank to obtain intimate contact between the gas, liquid and solids therein and to convert dissolved material into insoluble material by a conventional biochemical process. The liquid thus processed in the tubing is introduced into the central or inner tank where the treated solids rise to the surface for recycling in the system while the liquid effluent is filtered and discharged to a river or stream.

3,774,769

LIQUID FILTER PRESSURIZED APPARATUS

Edward A. Smith, Glenville, Conn., assignor to GAF Corporation, New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 201,060
Int. Cl. B01d 29/10
U.S. Cl. 210—232 3 Claims



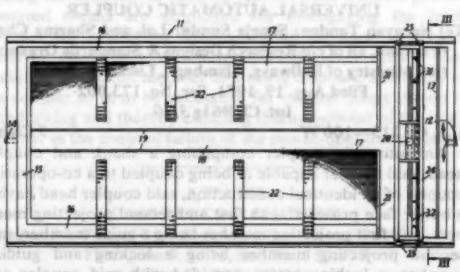
An improved pressurized liquid filtering apparatus particularly suitable for relatively small-sized pressure vessels in which a flange member sits in the top portion of the vessel and co-acts with the cover to provide a series of conduits for directing fluid under pressure into and out of the vessel. The flange member includes a number of grooves designed to accept sealing members as well as an internal structural surface for insuring proper alignment of the cover filtering bag and vessel body. An optional restraining means which may be integral or removable from the vessel body enables the invention to operate at pressures above those possible when using the filter bag alone.

3,774,770

SEDIMENTATION TANKS

Vaughan Sparham, Great Budworth, Northwich, and Gordon Frederick Pinner, Hitchin, both of England, assignors to British Wedge Wire Company Limited, Warrington, Lancashire, England

Filed July 12, 1971, Ser. No. 161,435
Claims priority, application Great Britain, July 14, 1970, 34,194/70
Int. Cl. B01d 35/16, 23/02
U.S. Cl. 210—298 3 Claims



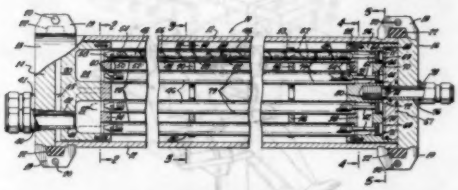
A sedimentation tank for liquid purification has a submerged horizontal filtering screen for purifying liquid passing upward through it and a scraping mechanism for scraping sludge from the bottom of the tank towards a sludge outlet. The filtering screen extends across the greater part of the interior of the tank, the zone above it being partitioned from an adjoining zone through which extends downwardly a transmission element drivably connecting the scraping mechanism to an outside power source.

3,774,771

REVERSE OSMOSIS MODULE

Serop Manjikian, Del Mar, and William K. Windle, Encinitas, both of Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 9, 1971, Ser. No. 206,469
Int. Cl. B01d 31/00
U.S. Cl. 210—321 8 Claims



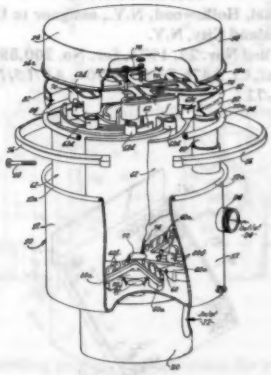
A reverse osmosis module contains a number of membrane elements each having a semipermeable membrane covered outer surface, and each surrounded by a flow tube for controlling liquid flow over the membrane surface. The membrane elements are enclosed in a pressure resistant container with liquid under pressure filling the space between the outsides of the liquid flow control tubes and the interior surface of the pressure resistant container.

3,774,772

SWIMMING POOL FILTER

Wilmot M. Yeths, South Gate, Calif., assignor to Pacific Fabrication, Inc., El Monte, Calif.

Filed Dec. 9, 1969, Ser. No. 883,027
Int. Cl. B01d 35/28
U.S. Cl. 210—456 2 Claims



An improved swimming pool filter is provided which includes arcuately-shaped internal filter elements, and which is constructed to provide a maximum filter area in a given cylindrical housing volume. The arcuate filter elements are mounted in an upright position in the cylindrical housing, in the illustrated embodiment, and the water enters the bottom

of the housing under pressure and is forced up towards the top. The water passes through the filter elements into the interiors thereof, and the interiors are coupled to a header manifold at the top of the housing. The header manifold is coupled to an outlet at the side of the housing. Appropriate filter material, such as diatomaceous earth may be placed in the housing to cover the external surfaces of the filter elements.

3,774,773

MAGNETIC MEDICAL TOOL HOLDER STAND

Burton David Brent, Oak Park, Ill.

Continuation-in-part of Ser. No. 229,732, Feb. 28, 1972. This application Aug. 14, 1972, Ser. No. 280,111

Int. Cl. A47f 5/00, 7/00; E06b 7/28

U.S. Cl. 211—60 T **5 Claims**

A portable medical tool holder stand with a removably coupled magnetic medical tool holder arranged to be placed proximate an operating field so as to present a magnetic purchase for medical tools within the convenient reach of the operator. The tool holder is capable of being removably coupled to various different support members suitable for different procedures and including support structure capable of being mounted upon a dental examining chair, a hand table and the like, with an articulated linkage extension being provided either for direct coupling between the tool holder and the support members or as part of a supporting structure.

3,774,774

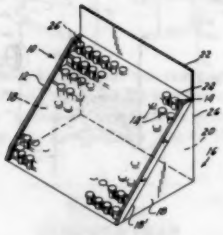
DISPLAY STAND

Gary G. Menkel, Holliswood, N.Y., assignor to Design Center, Inc., Long Island City, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,888

Int. Cl. A47b 73/00, 97/04; A47f 5/11

U.S. Cl. 211—72 **16 Claims**



An article display stand is disclosed in which a first plate, having a stepped surface defined by a plurality of angularly related step and riser surface portions is secured to a second plate, superimposed upon the first plate, and having a plurality of surface portions respectively associated with the risers in the first plate. At least portions of the associated surfaces of the second plate are located in spaced relation to the risers in the first plate, to define a plurality of rows of upwardly opening receptacles between the plates in which articles to be displayed may be received and supported. Means are provided for supporting the plates in a generally inclined configuration for display of articles placed in the receptacles, and in one embodiment, the support means is formed integrally with one of the plates.

3,774,775

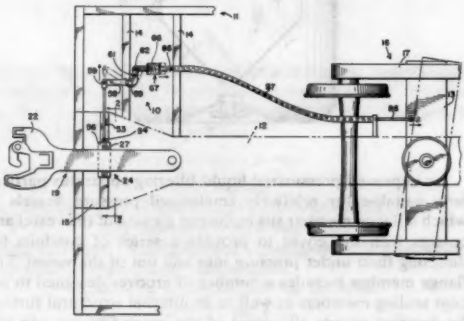
COUPLER POSITIONING DEVICE

John W. Allen, Flossmoor, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed Dec. 7, 1970, Ser. No. 95,512

Int. Cl. B61g 7/12

U.S. Cl. 213—15 **8 Claims**



A coupler positioning device including a movably mounted coupler carrying carriage which maintains an uncoupled coupler slightly spaced from the primary coupler support. An actuating linkage for positioning the carriage to correspond to the angular position of the trucks includes a push-pull cable. A push-pull spring arrangement including a pre-compressed spring serves to transmit the moving force from the cable connected to the truck to a linkage fixed to the carriage.

3,774,776

UNIVERSAL AUTOMATIC COUPLER

Tej Narayan Tandon; Saneja Sundar Lal, and Sharma Chandra Bhan, all of c/o Research Designs & Standards Organization Ministry of Railways, Alambagh, Lucknow, India

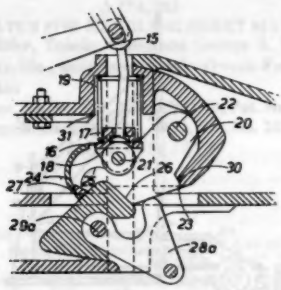
Filed Aug. 19, 1971, Ser. No. 173,002

Int. Cl. B61g 3/10

U.S. Cl. 213—100 W **5 Claims**

An automatic coupler comprising a shank and coupler head, said coupler capable of being coupled to a co-operative coupler of an identical construction, said coupler head having a buffer face provided with first and second projecting members, said first projecting member being a guide member, said second projecting member being a locking and guiding member, a locking means provided with said coupler and disposed within said first projecting member, a first opening provided above said second projecting member and adapted to receive the first projecting member of a co-operative coupler for guiding said two couplers, a second opening provided below said first projecting member and adapted to receive and

lock, in conjunction with said locking means, the second projecting member of a co-operating coupler thereby resulting in two independent locking actions between two co-operating couplers, and an unlocking means for disengaging the locking



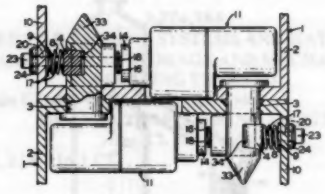
means with the second projecting member and such that a single actuation of the unlocking means results in two independent unlocking actions between two co-operating couplers, said unlocking means being also a lock set means.

3,774,777

MANUAL LATCH RETRIEVER ASSEMBLY FOR A RAILWAY CAR COUPLER

Ronald F. Monzi, Lower Burrell, Pa., assignor to Westinghouse Electric Corporation, Wilmerding, Pa.

Filed Oct. 18, 1971, Ser. No. 189,941
Int. Cl. B61g *3/08*
U.S. Cl. 213—159 **6 Claims**



A manual latch retriever for use with automatic railway car couplers of the type wherein a latch member, upon coupling action, is moved into engagement with a coupling pin for locking the couplers in coupled relation, and wherein power-operated means are employed for disengaging the latch member for permitting uncoupling of the cars, said latch retriever comprising manually operable lever means connected to said latch member and being disposed externally of the coupler so as to be accessible for manual manipulation in withdrawing and thereby effecting disengagement of the latch member in the event of failure of the power-operated means.

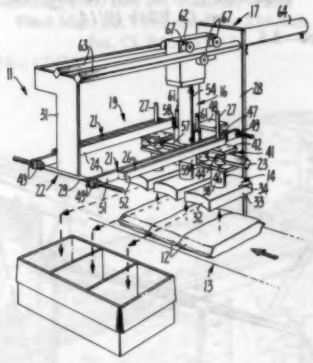
3,774,778

CASE PACKING MACHINE

Raymond A. Flaig, 934 S. Delaware, San Mateo, Calif.

Filed June 9, 1971, Ser. No. 151,177
Int. Cl. B65g *57/04*
U.S. Cl. 214—1 BT **12 Claims**

A manipulating machine for removing a plurality of bags of loosely particulate material from a conveyor and placing them in a carton, using vacuum pickup heads which seize most of the top area of the relatively flat bags on the conveyor. The mechanism moves the pickup heads toward and away from the top surfaces of the bags on the conveyor, and transports the picked-up bags transversely to the conveyor to a waiting carton. A quick-dumping valve relieves the vacuum to drop the bags. An adjustable spacing mechanism spaces the bags apart by moving the heads apart after the bags are picked up, so that the bags may clear the separators in the carton. A cycle timer



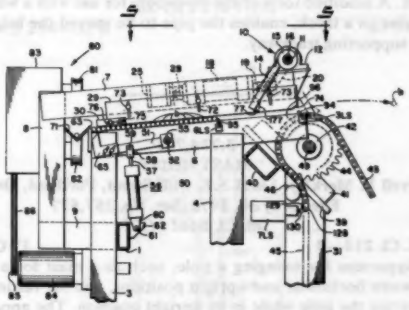
controls the pneumatic actuators which move the parts of the machine. Stop members in the pickup heads limit excursion of the bag into the head, and the contour of the head is curved to approximate the contour of the top of the bag. A modified form is shown in which the bags are released onto a receiving platform and shoved sideways in a stack by a transfer mechanism into the carton.

3,774,779

HIGH SPEED UNSCRAMBLER FOR BAR FEEDERS

Frank F. White, Shaker Heights, Ohio, assignor to Automation Development Corporation, Mentor, Ohio

Filed Nov. 15, 1971, Ser. No. 198,919
Int. Cl. B65g *65/02*
U.S. Cl. 214—1 P **24 Claims**



An unscrambling process and apparatus for rapidly loading bars from a bundle to the storage ramp of a bar feeder employs slings for raising and lowering the bundle to orient the bars and has guide means above the storage ramp to form a single row on the ramp while permitting at least several bars to enter the ramp each time the slings are raised. Any interfering bar remaining near the open entrance side of the ramp is thrown over the remaining bars carried by the slings at a predetermined time in the cycle. This prevents jamming and

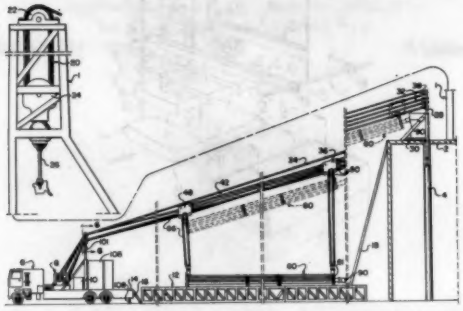
permits reliable automatic feeding of the bars at a high rate far greater than that which could be achieved by previously known unscramblers.

3,774,780

PORTABLE PIPE PICK-UP, CONVEYING AND RACKING DEVICE

William B. Buffington, Odessa, Tex.

Filed Sept. 7, 1972, Ser. No. 287,110
Int. Cl. E21b *19/14*
U.S. Cl. 214—2.5 **15 Claims**



A device and system for picking up pipe, which is arranged horizontally on a rack, putting the pipe in position to be run into the bore hole of a well, removing the pipe from the bore hole of the well and conveying it to a position to be returned to a horizontally racked position. The device utilizes a hydraulic elevating mechanism to move the pipe into position, to be moved by a cable supported and cable actuated power conveyor, to be picked up while horizontally arranged on a rack, and conveyed semi-automatically to a position adjacent the drilling rig to enable pipe elevators to be attached to the pipe for suspending the pipe in a derrick to be attached to the length of the pipe therebelow to be run into the bore hole of the well, and to be removed from the bore hole of the well, whereupon the pipe is directed onto a trolley for movement down a cable supported and cable actuated power conveyor, to be discharged horizontally from the conveyor onto a pipe rack. A modified form of the invention, for use with a wheeled carrier on a track, enables the pipe to be moved the length of the supporting trackway.

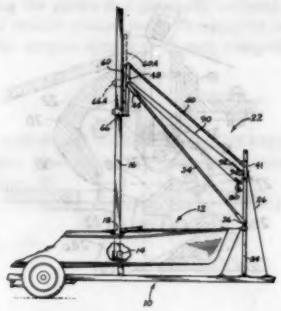
3,774,781

MAST HOIST

Darrell P. Merkley, 13621 S.E. Mill Street, Portland, Oreg.

Filed May 30, 1972, Ser. No. 257,577
Int. Cl. B66f *11/02*
U.S. Cl. 214—3 **17 Claims**

Apparatus for swinging a pole, such as a mast for a boat, between horizontal and upright positions, and for raising and lowering the pole while in its upright position. The apparatus includes a mount, an elongated support arm connected to the mount for vertical swinging, and a shorter operating arm connected to the mount above the support for vertical swinging. An elongated guide is pivotally connected to the opposite set of ends of the operating arm and support in such manner that when the support and operating arm are swung vertically the guide is swung between horizontal and upright positions. A securing member for holding a pole parallel to the guide is mounted for movement longitudinally along the guide. A line, secured at one of its ends to the securing means, is trained over a pulley on the support, and extends in a reach above the support to a winch on the mount. With the guide in its horizontal position, taking up of the line draws the securing means to a stop position where it can move no farther along the guide. Further taking up the line swings the support,



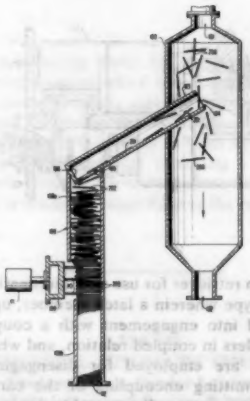
operating arm, and guide to their raised positions. Holding means is provided for securing these members in their raised positions. Paying out of line from the winch then permits the securing means and pole to move downwardly along the guide.

3,774,782

MACHINERY FOR HANDLING SYNTHETIC FILAMENT

John C. Lewis, Jr., Middlebury, Vt., assignor to Tucel Industries, Inc., Middlebury, Vt.

Filed Oct. 29, 1971, Ser. No. 193,855
Int. Cl. B65g *57/18*
U.S. Cl. 214—6 D **16 Claims**



A method and apparatus are presented for aligning and orienting cut-to-length synthetic filaments or the like in parallel relationship for use directly in brushmaking or tufting machines, or for packaging or bundling. The apparatus of this invention includes a housing through which nonaligned filaments are allowed to fall. A conduit extending diagonally into a central portion of the housing selects oriented filaments and conveys them to an aligning groove. In the aligning groove the filaments are aligned longitudinally in parallel relationship and allowed to settle into a straightening section. In the straightening section the filaments surround a plurality of pins extending from a trim plate disposed perpendicularly to the longitudinal axes of the filaments. Vibrating means vibrates the trim plate and the pins mounted thereon to further align the filaments in

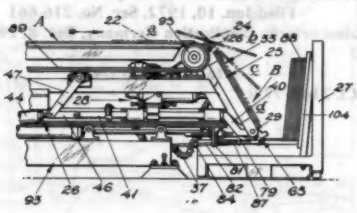
parallel relationship and to align the ends thereof in a common plane. The straightening section may feed directly to a stock box for use in a brushmaking or tufting machine, or to conventional bundling or packaging apparatus.

3,774,783

APPARATUS FOR HANDLING SHEET MATERIAL

Alfred H. Miller, Toledo, Ohio, and George A. Dean, Lydia, Kansas City, Mo., assignors to Libby-Owens-Ford Company, Toledo, Ohio

Division of Ser. No. 56,529, July 20, 1970, Pat. No. 3,679,076.
This application May 30, 1972, Ser. No. 257,973
Int. Cl. B65g *57/28*
U.S. Cl. 214—7 9 Claims



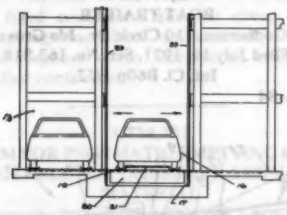
This application discloses transferring glass sheets from a horizontal conveyor to a vertical storage buck by permitting each sheet to ride over and drop off a driven roll at the discharge end of the conveyor and onto the angled face of a vacuum platen which receives, aligns and retains it. The sheet is then carried forward by the platen, swung from the receiving to a stacking angle and released, whereupon the conveyor and platen index themselves rearwardly and the platen returns to receiving position.

3,774,784

VEHICLE PARKING SYSTEMS AND MATERIAL HANDLING AND STORAGE AND MECHANISMS RELATING THERETO

Benjamin Gordon Glass, San Diego, Calif.

Filed Mar. 22, 1971, Ser. No. 126,477
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 CE 5 Claims



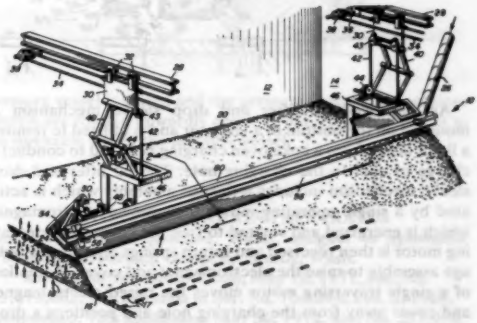
A rapid multiple vehicle parking system, automatic or semi-automatic, suitable also for cargo handling in which vehicles are driven onto skates at reception and prealigned, in most cases, for eventual exiting, then pulled onto a platform-elevator which includes means of arresting vehicles and on and off loading on either side, then vehicle is conveyed horizontally on gear-rack rails positioned on either side of platform elevator to rows of multi-level storage modules flanking the access bay in which the platform-elevator can move both horizontally and vertically to vacant modules selected by a control or memory bank which monitors the parking positions and vehicle retrieval back to the reception and exiting area when required. Operational speed is assisted by the simultaneous operation of more than one platform-elevator in the same access bay. Platform propulsion power is via bus-bars and rolling-contacts and control is similarly achieved or by telemetered signals to servo units from a radio signal transmitter.

3,774,785

KILN LAYING APPARATUS

Allen J. Gasseling, P.O. Box 37, Yakima, Wash.

Filed Mar. 30, 1972, Ser. No. 239,449
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CA 16 Claims



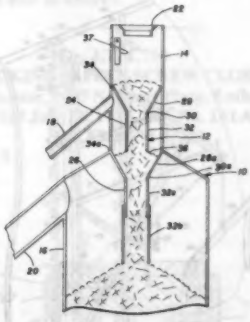
An apparatus for dispensing hops or other particulate material in a drying room, said apparatus comprising an elongated conveyor assembly with a transversely sloped moving belt for advancing the hops in a manner that they tend to roll or slide off to form an elongated pile which builds up to the level of the belt, a spreader board mounted beneath the moving belt, and means for intermittently advancing the conveyor assembly in a transverse direction, whereby the spreader board levels the hops to form an even layer for uniform drying.

3,774,786

FURNACE FEEDING AND DELIVERY APPARATUS

Clyde L. Cruse, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Continuation-in-part of Ser. No. 858,778, Sept. 17, 1969, abandoned. This application Aug. 27, 1971, Ser. No. 175,574
Int. Cl. F27b *11/12*
U.S. Cl. 214—35 R 23 Claims



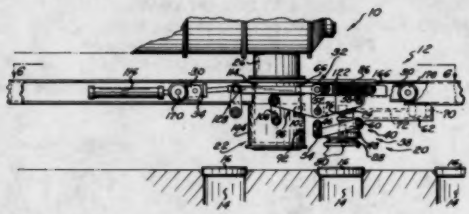
A pressure maintenance feeding and/or delivery system for a gravity feed shaft furnace comprising one or more groups of spaced apart funnels disposed in axial relationship within said furnace whereby the material charged into said furnace passes through said groups of funnels prior to or subsequent treatment therein.

3,774,787

LID LIFTER AND DROP SLEEVE MECHANISM

Ronald R. Ledinsky, Parma, Ohio, assignor to W. Vance Middough & Associates, Cleveland, Ohio

Filed Sept. 15, 1972, Ser. No. 289,470
Int. Cl. C10b 31/04
U.S. Cl. 214—35 R 17 Claims



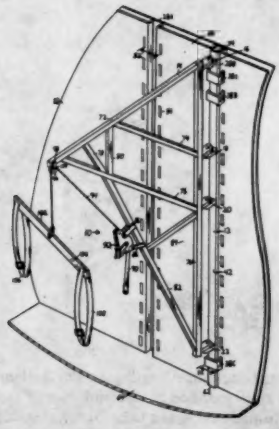
An improved lid lifter and drop sleeve mechanism is mounted on the bottom of a larry car and is utilized to remove a lid or cover from a coke oven charging hole and to conduct a charge of coal to the charging hole. The lid lifter and drop sleeve mechanism includes a linkage assembly which is actuated by a single operating motor to lower an electromagnet which is energized and rotated to free the cover. The operating motor is then reversed and return springs operate the linkage assembly to raise the electromagnet and cover. Actuation of a single traversing motor moves the raised electromagnet and cover away from the charging hole and positions a drop sleeve assembly in alignment with the charging hole. The linkage assembly is then actuated by the operating motor to lower a smoke or drop sleeve member into engagement with the entrance to the charging hole and a charge of coal is delivered from the larry car through the drop sleeve assembly to the coke oven. The operating motor is then actuated to enable the return springs to again operate the linkage assembly to raise the sleeve member. The traversing and operating motors are then activated in sequence to move the electromagnet back into alignment with the charging hole and return the cover.

3,774,788

LOADING AND UNLOADING DEVICE

Blaine E. Sowers, Grabill, and Vaughn E. Hunnicutt, Fort Wayne, both of Ind., assignors to North American Van Lines, Inc., Fort Wayne, Ind.

Filed Feb. 7, 1972, Ser. No. 224,094
Int. Cl. B60p 1/54
U.S. Cl. 214—75 H 15 Claims



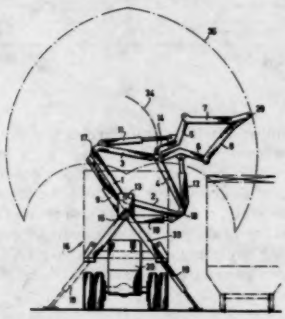
The invention is a portable loading and unloading device which comprises a mast adapted to be received in any one of the complementary shaped recesses of the sidewall of a cargo compartment. The mast is provided with means for securing the mast in the recess against movement in a direction laterally outwardly from the sidewall. The sidewall of the cargo compartment and the sides of the recess prevent lateral movement of the mast in other directions. The foot of the mast supports the entire loading and unloading device and the load carried thereby on the floor of the cargo compartment. Pivotably secured to the mast is a boom swingable about an axis extending generally parallel to the longitudinal dimension of the mast.

3,774,789

LOADING APPARATUS FOR TRANSPORT VEHICLES

Kaspar Klaus, Illerstrasse 14, Memmingen, and Georg Felkel, 7951 Berkheim, both of Germany

Filed Jan. 10, 1972, Ser. No. 216,661
Claims priority, application Germany, Dec. 8, 1971, P 21 61 033.3
Int. Cl. B60p 1/48
U.S. Cl. 214—77 R 11 Claims



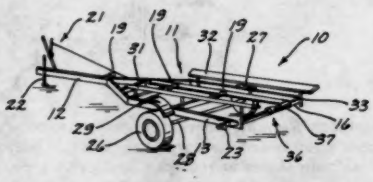
A vehicular loading and unloading apparatus, for example for handling container traffic, comprises two loading appliances, one fore and one aft of the vehicle, each comprising at least one quadrilateral lever and linkage system with a power unit to extend and contract it. There are preferably two such systems arranged end to end in each appliance, this giving a large operating range allied with a compact collapsed structure.

3,774,790

BOAT TRAILER

Byron Leroy Godbersen, 710 Circle Dr., Ida Grove, Iowa

Filed July 19, 1971, Ser. No. 163,818
Int. Cl. B60p 1/52
U.S. Cl. 214—84 3 Claims



A two-wheel trailer for transporting boats including longitudinally spaced and aligned keel rollers serving in conjunction with transversely parallel, longitudinally extended bunks for supporting a boat in transport position, and including a vertically movable roller mounted at the rear of the trailer for lifting the boat off the bunks by a combined rotary, hinged action of a lift handle, the latter retained in place by in one position by a conventional trailer light bracket.

3,774,791

APPARATUS FOR PRODUCING, PROCESSING AND MANIPULATING FILTER ROD SECTIONS

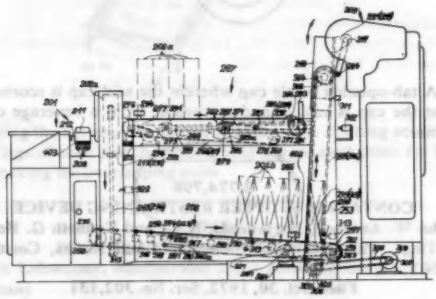
Ulrich Bornfleth, Hamburg, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany

Filed May 21, 1971, Ser. No. 145,843

Claims priority, application Germany, May 26, 1970, P 20 25 657.9

Int. Cl. B65b 35/00

U.S. Cl. 214—302 6 Claims



Apparatus for producing, processing and manipulating filter rod sections,wherein the filters contain bundles of filamentary plastic material which is treated with a plasticizer, has a filter rod making machine serving to deliver filter rod sections to a loading unit. The latter forms rows of filter rod sections which are introduced into empty containers for transport to an evacuating station where the contents of filled containers are transferred into the hopper of a transfer unit having several pneumatic conveyors which transport filter rod sections into the magazines of discrete filter cigarette making machines whenever the supply of filter rod sections in the respective magazines decreases below a predetermined value. The period of dwell of filter rod sections in the loading unit, in filled containers, in the hopper of the transfer unit and in the pneumatic conveyors is long enough to insure satisfactory setting of plasticizer prior to severing of filter rod sections and prior to assembly of the resulting filter plugs with sections of wrapped tobacco rods to form filter-tipped smokers' products. The speed of the filter rod making machine decreases or increases in automatic response to an increase or reduction in the number of filled containers, and the speed of the filter cigarette making machines automatically increases or decreases in response to an increase or reduction in the number of filled containers.

3,774,792

SYSTEM FOR PNEUMATIC EMPTYING OF NON-PRESSURIZABLE CONTAINERS FILLED WITH BULK MATERIAL

Gunter Willmroth, Pappelallee 7,505 Porz, Germany

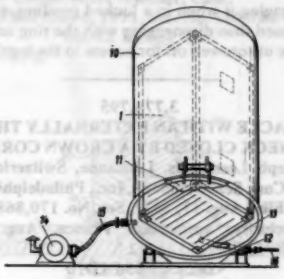
Filed June 7, 1971, Ser. No. 150,597

Claims priority, application Germany, June 8, 1970, P 20 28 068.6

Int. Cl. B65g 65/40

U.S. Cl. 214—310 2 Claims

A system for handling and emptying containers for fluid or pulverulent material. The container includes a discharge opening adjacent a lowermost corner and near a longitudinal edge. A second opening is provided at a remote corner of the container for allowing pressure compensation. The container is placed upon a suitable support means so that the longitudinal edge comprises the lowermost portion of the container which is then placed within a pressure vessel through an access opening in one end thereof. After the discharge opening of the container is connected to a flow pipe extending outwardly through the pressure vessel, a removable wall of the



pressure vessel is sealed and the pressure vessel and container therein are rotated upwardly about an axis located adjacent to the openable end of the pressure vessel.

3,774,793

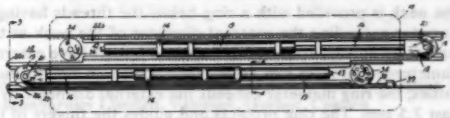
AUTOMOBILE PARKING APPARATUS

Duane V. Sanders, Spokane, Wash., assignor to Systematic Multi-Level Parking Company, Seattle, Wash.

Division of Ser. No. 143,686, May 10, 1971, Pat. No. 3,679,083, Continuation of Ser. No. 704,096, Feb. 8, 1968, abandoned. This application May 30, 1972, Ser. No. 257,956

Int. Cl. E04b 6/06

U.S. Cl. 214—730 4 Claims



This invention relates to a self-contained apparatus for extending an object from a central point in one of a plurality of directions and particularly to a new and improved automobile parking apparatus. The apparatus is mounted on an elevator and operates to direct a dolly having an automobile supported thereon into a stall on either side of the elevator. The apparatus includes fluid drive means coupled to the dolly through a unique pulley arrangement which multiplies the movement of the drive means to extend the dolly into a predetermined stall as desired.

3,774,794

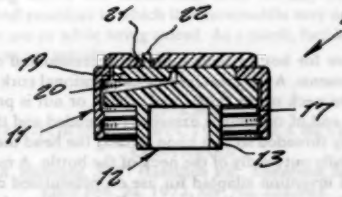
LOCKING SAFETY SCREW CLOSURE

Charles G. Bateman, 1407 Newport Place, Lutherville, Md.

Filed July 12, 1971, Ser. No. 161,655

Int. Cl. B65d 55/02

U.S. Cl. 215—9 2 Claims



A locking closure for a container such as a bottle, the closure being designed particularly to prevent children to gain ac-

cess to dangerous material within the container, the device comprising a plug that is molded into a neck of the bottle and a rotatable threaded ring for threadingly engaging the outer side of the bottle neck, the ring having a depressable lever of the plug engaging it when in a locked position, the lock lever when depressed thus disengaging with the ring and permitting the ring to be unscrewed off for access to the bottle content.

3,774,795

RECEPTACLE WITH AN EXTERNALLY THREADED NECK CLOSED BY A CROWN CORK

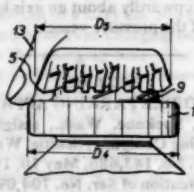
Antoine Joseph Leenaards, Lausanne, Switzerland, assignor to Crown Cork Seal Company, Inc., Philadelphia, Pa.

Filed Aug. 11, 1971, Ser. No. 170,868

Claims priority, application France, Aug. 14, 1970, 7029993; July 5, 1971, 7124412

Int. Cl. B65d *41/10*

U.S. Cl. 215—39 **15 Claims**



A container with an externally threaded neck adapted to be closed by a twist-off crown. The height of the threads as measured from the upper surface of the neck is greater than one-quarter of the external diameter of the neck at the threads. The neck is provided with a ring below the threads having a diameter exceeding the external diameter of the neck at the threads by at least 10 percent. Standard bottles have external diameters equal to 25 mm, rarely greater than 26 mm; for such bottles, the ring diameter exceeds the external diameter by at least 2.5 mm. The ring protects and guides the fingers of the user when unscrewing the crown.

3,774,796

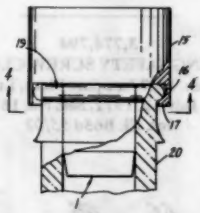
CLOSURE FOR BOTTLES

Carter H. Arnold, 317 Rocky Point Rd., Palos Verdes, Calif.

Filed July 5, 1972, Ser. No. 269,118

Int. Cl. B65d *39/00, 41/16*

U.S. Cl. 215—41 **2 Claims**



A closure for bottles having either unpressurized or pressurized contents. A plug similar to a conventional cork is press fitted in the neck of the bottle and a head or nut is provided. The outer end of the plug is externally threaded and the head is internally threaded so that upon turning the head the plug is moved axially outwardly of the neck of the bottle. A modification of the invention adapted for use on pressurized contents such as champagne includes an axially extending skirt provided with a radially inwardly extending flange adapted to grip the conventional annular bead at the outer end of the neck of the bottle so as to resist the internal pressure.

3,774,797

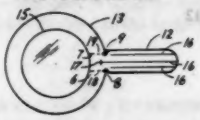
BOTTLE CAP CLOSURE

James H. Vliet, 1104 W. Clark St., Urbana, Ill.

Filed Nov. 26, 1971, Ser. No. 202,146

Int. Cl. B65d *43/02*

U.S. Cl. 215—46 A **5 Claims**



A tab-opening bottle cap wherein the said cap is scored so that the cap is easily hand removable from a beverage container.

3,774,798

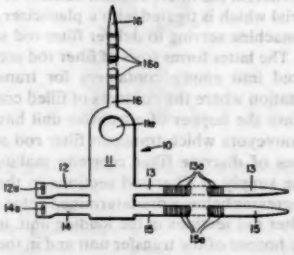
CONTAINER STOPPER RESTRAINING DEVICE

John W. Andrade, Horseheads, N.Y., and Kenneth G. Howe, Tioga, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,131

Int. Cl. B65d *55/06*

U.S. Cl. 215—94 **4 Claims**



A novel device for restraining movement of a stopper from the mouth and neck of a container of a frangible material such as glass. The device includes a main stopper restraining portion of a flexible material for dispostion in at least near contact with the upper surface of the stopper and a plurality of straps or strap portions of a flexible material and extending outwardly from the main stopper portion for locking to each other about the neck of the container and for locking of such main portion of the device in its stopper restraining position.

3,774,799

SECTIONAL FLOATING ROOF AND METHOD OF FORMING SAME

Milton W. Heisterberg, Flossmoor, Ill., assignor to General American Transportation Corporation, Chicago, Ill.

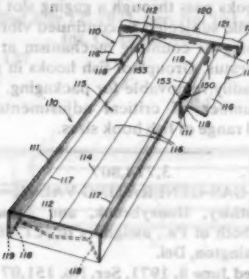
Filed Nov. 3, 1971, Ser. No. 195,105

Int. Cl. B65d *87/18*

U.S. Cl. 220—26 R **4 Claims**

A floating roof for use in a storage tank having an upstanding substantially cylindrical seal comprises a plurality of individually buoyant inner and outer roof sections, each including a continuous peripheral wall therearound and a bottom wall closing the area defined by the peripheral wall, the roof sections being arranged substantially to fill the area defined by the associated shell with the peripheral walls of adjacent roof sections abutting against one another, the abutting peripheral wall portions of adjacent roof sections being secured together by interlocking pairs of lugs on each section; the lugs are

formed by on-site die punching of the abutting peripheral wall portions resulting in the pair of lugs of one section overlapping the corresponding pair of lugs on the abutting section, the lugs of each pair then being bent toward each other for interlocking the overlapping pairs.



3,774,800

BEAKER AND CLOSURE THEREFOR

Kurt Lohwasser, Milchstrasse 22, D 2000 Hamburg 22, Germany

Filed June 10, 1971, Ser. No. 151,852

Claims priority, application Germany, July 21, 1970, P 20 32 675.4

Int. Cl. B65d *43/16*

U.S. Cl. 220—31 S **3 Claims**

A container for semi-solid commodities having at least one flat side portion while the lid of the container has at least a flat mating portion. The lid may have a tongue or continutaion which covers part of the flat portion and may be fastened to the flat side. Several containers as described above may be linked together by stems extending from the edges of the rectilinear portion of the upper rim of the container. The upper rim of the container may have a wave-like rather than a circular shape.

3,774,801

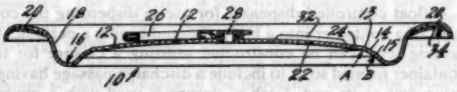
REINFORCED METAL CAN END

Erik Gedde, Park Ridge, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Feb. 22, 1971, Ser. No. 117,255

Int. Cl. B65d *7/42*

U.S. Cl. 220—66 **6 Claims**



A metal can end whose central panel has at least two peripheral, radially-separated, concave areas of curvature which provide the end with increased resistance against internal pressure. The panel may also include one or more peripheral steps or convex areas of curvature adjacent the concave areas of curvature.

3,774,802

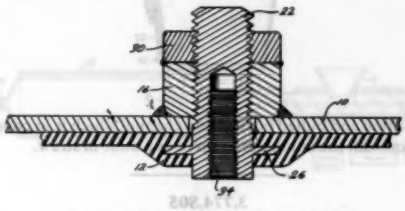
ATTACHMENT APPARATUS FOR PRESSURE VESSELS

Theodore H. O'Cheskey, Whittier, Calif., assignor to United States Filter Corporation, Whittier, Calif.

Filed May 6, 1971, Ser. No. 140,740

Int. Cl. B65d *25/00*

U.S. Cl. 220—85 R **13 Claims**



Apparatus for attaching internal parts to the interior of a pressure vessel having an inner lining of uncured rubber includes a rigid fastener, preferably an internally threaded nut, rigidly secured over an opening through the wall of the vessel and the rubber lining. A rigid bolt is threaded through the nut from the inside of the vessel so that a lateral shoulder on the bolt is tightened against the rubber lining. A layer of uncured rubber is mounted over the shoulder, and the layer is cured when the inner lining is being cured to embed the shoulder in the rubber and seal the bolt against leakage. Internal parts are attached to the portion of the bolt inside the vessel, and the structural load applied to the bolt by the internal parts is transmitted to the wall of the vessel through the rigid bolt and nut.

3,774,803

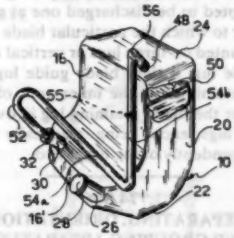
FUEL TANK AIR VENT LINE

Jerome Bombardier, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed Sept. 18, 1972, Ser. No. 289,845

Int. Cl. B65d *25/00*

U.S. Cl. 220—85 **6 Claims**



An air vent line for use with a snowmobile fuel storage tank is shaped so as to have at all times a portion thereof vertically extending above the tank's fuel level for any of the non-horizontal positions in which the snowmobile may normally be when in use or while being stored. As a result, fuel leakage occurrences are greatly reduced.

3,774,804

STRAW-FORMING STRUCTURE FOR A BEVERAGE CONTAINER

Steven A. Henning, 3437 Hamilton Rd., Anderson, Ind.

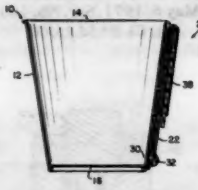
Filed Feb. 24, 1972, Ser. No. 228,964

Int. Cl. A47g *19/22*

U.S. Cl. 220—90.2 **4 Claims**

A straw-forming structure is attached to a beverage container. The structure has outer and inner walls and is originally

in a collapsed position. A tab having an enlarged lobe at its lower end is carried between the outer and inner walls and



when lifted and pulled out forms a channel which is in communication with the container to serve as a built-in straw.

3,774,805

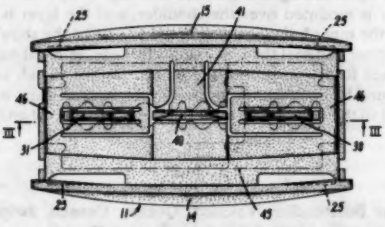
BLADE HOLDER AND DISPENSER

John R. Baker, Augusta County; Richard E. Bonin, and William S. Smith, both of Staunton, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed July 21, 1971, Ser. No. 164,746

Int. Cl. B65d *83/10*

U.S. Cl. 221—67 **6 Claims**



A holder and dispenser for razor blades of the type having double cutting edges and a central longitudinal slot, the blades being arranged in a stack in alternately longitudinally offset relation and adapted to be discharged one at a time from the end of the holder to which the particular blade is oriented, the blades being mounted on three lugs or vertical ribs comprising a left blade guide lug, a right blade guide lug and an intermediate blade retaining lug, the inner ends of the blades all being looped over the blade retaining lug in overlapping relation the three lugs each being elastically mounted and depressible independently of the other two.

3,774,806

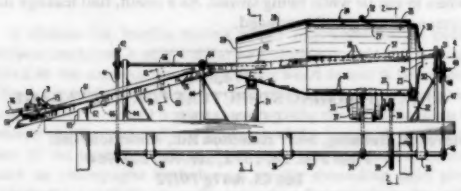
FISH HOOK SEPARATING, ORIENTATION, FEEDING AND GROUPING APPARATUS

Jerry E. Swart, P.O. Box 332, and Homer Braudice Bennett, Jr., Rt. 1, both of Strong, Ark.

Filed Nov. 21, 1972, Ser. No. 308,602

Int. Cl. B65h *9/00*

U.S. Cl. 221—162 **15 Claims**



A rotary tumbler separates fish hooks from a random mass and delivers them onto a vibratory pick-up bar which is inclined, enabling the fish hooks to slide toward a feed bar. Improperly arranged hooks on the pick-up bar are removed and delivered back into the tumbler for recycling. Properly oriented fish hooks pass through a gaging slot in the inclined feed bar and while subjected to continued vibration gravitate toward a grouping or counting mechanism at the discharge end of the apparatus. Groups of fish hooks in predetermined numbers are readily removable for packaging. The apparatus possesses a number of critical adjustments to facilitate processing a full range of fish hook sizes.

3,774,807

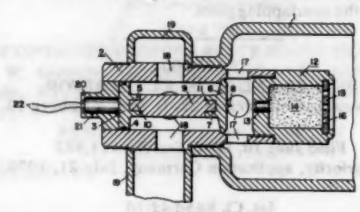
GAS-GENERATING VALVE

Donald P. Keathley, Honeybrook, and John T. M. Lee, Phoenixville, both of Pa., assignors to ICI American Incorporated, Wilmington, Del.

Filed June 8, 1971, Ser. No. 151,071

Int. Cl. B67b *7/24*

U.S. Cl. 222—3 **5 Claims**



A gas-generating valve for releasing a pressurized fluid from a container and releasing a gas into the fluid from a gas generator after the fluid has been released. This is accomplished by opening an outlet port on the container, preferably by the action of a piston moving relative to a casing. Gas from the gas generator is then released into the fluid, again preferably by the movement of the piston.

3,774,808

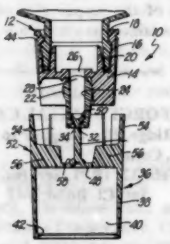
FLOAT CONTROLLED DISPENSERS

Donald H. La Vange, Uxbridge, Mass., assignor to Polytop Corporation, Slatersville, R.I.

Filed May 12, 1972, Ser. No. 252,715

Int. Cl. E03d *9/02*

U.S. Cl. 222—57 **2 Claims**



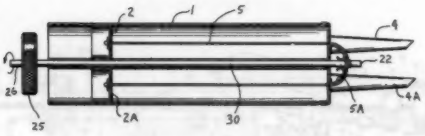
A float controlled dispenser for use in dispensing the contents of a container into a body of liquid having a periodically varying level can be constructed utilizing a closure for the container formed so as to include a discharge passage having a valve seat at its end. Such a closure is used with a control member having a float structure, a valve stem extending from the float structure through the valve seat and into the passage and a valve member located on the float structure. When this dispenser is located with the float structure at its bottom the level of the float structure as determined by the level of the liquid within the body will move the valve member relative to the valve seat so as to open and close the complete dispenser.

3,774,809

CONTAINERS FOR EXTRUDABLE MATERIALS

Francis H. Bratton, P.O. Box 473, 143 Climax Rd., Avon, Conn.

Filed July 12, 1971, Ser. No. 161,502
Int. Cl. B67d 5/52
U.S. Cl. 222—137 11 Claims



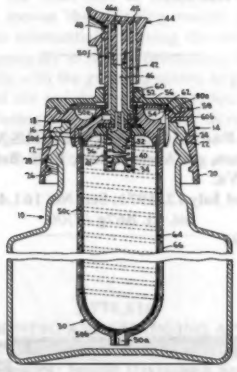
Cartridge containers for extrudable viscous materials which may be operated to extrude their contents by tensile force on a filament attached to a movable piston are provided. The cartridge system is compatible with the conventional type caulking guns but may be used as well with small manually or mechanically driven windup systems contained within, or closely associated to, the packages.

3,774,810

LIQUID PRODUCT DISPENSER

Douglas F. Corsette, Los Angeles, Calif., assignor to Diamond International Corporation, New York, N.Y.

Filed Aug. 12, 1971, Ser. No. 171,246
Int. Cl. B67d 5/62
U.S. Cl. 222—146 9 Claims



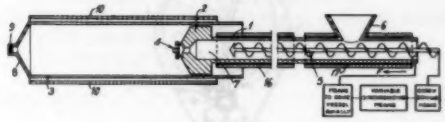
A liquid product dispenser of the type in which a pressurized volatile liquid propellant is contained within a propellant cartridge housed within a container for the product to be dispensed. The propellant is selectively discharged through a discharge passage into the atmosphere under the control of a discharge valve. A delivery conduit for the product within the container is arranged in aspirating relation to the discharge passage so that discharge of the propellant draws the product from the container through the delivery conduit for entrainment in and discharge with the propellant. This conduit extends between the walls of a double-walled propellant cartridge, so that the product flows through said conduit in heat-exchange relation with the propellant to transfer part of its heat to the propellant for use in enhancing the rate of evaporation or volatilization of the latter.

3,774,811

APPARATUS FOR OBTAINING SYNTHETIC FOAM MATERIALS

Leon Staerman, 4, rue des Lilas, Aulnay-sous-Bois, Seine Saint-Denis, France

Filed Dec. 6, 1971, Ser. No. 205,131
Claims priority, application France, Dec. 10, 1970, 7044491
Int. Cl. B29b 3/00
U.S. Cl. 222—190 3 Claims



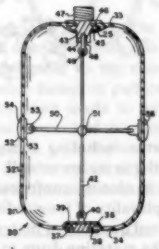
In the production of a foam plastics material by a transfer injection process, the transfer nozzle is withdrawn from the foaming chamber as it injects plasticized material into that chamber so that the newly injected material does not compress previously injected material and, until the foaming is complete, there is no movement of the material in the foaming chamber apart from its expansion during foaming. The transfer nozzle directs material against the walls of the foaming chamber. It is valved so that a return movement of the nozzle into the foam chamber can expel foamed material from that chamber.

3,774,812

MOLDED CONTAINER WITH INTERNAL SUPORT MEANS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 744,048, July 11, 1968. This application Feb. 3, 1972, Ser. No. 223,280
Int. Cl. B65d 37/00
U.S. Cl. 222—211 9 Claims



A container is provided which is produced by rotationally molding a plastic material wherein an internal support is secured within the molding during the molding procedure. The support extends across the interior of the hollow molding and becomes integrally secured to the opposite walls thereof by molding. In one form, the support is a hollow rigid or flexible tubular member which is also utilized for dispensing the contents of the container.

In another form, the support is a flexible cable or wire or a plurality thereof, having its ends secured to opposite wall portions of the container by special fittings which are removeable secured to opposite walls of the mold cavity.

3,774,813

BEVERAGE FEEDING APPARATUS FOR USE WITH FULL PRESSURE SUIT

John E. Vanderveen, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 17, 1972, Ser. No. 254,142
Int. Cl. B65d *37/00*
U.S. Cl. 222—211 **1 Claim**

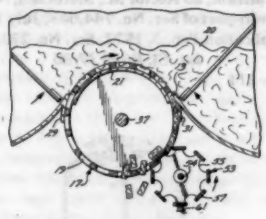
A beverage feeding bottle for use with a full pressure suit having a stainless steel tube sealed to a T-member and passing through the T-member into a feed bottle. A bleed port is provided in the stem of the T-member which permits equalization of pressure in the bottle during ascent or in the event of loss of cabin pressure.

3,774,814

METERING APPARATUS

Frank V. Vidjak, Long Beach, Calif., assignor to Star-Kist Foods Inc., Terminal Island, Calif.

Filed Oct. 26, 1971, Ser. No. 192,337
Int. Cl. G01f *11/10*
U.S. Cl. 222—220 **4 Claims**



A metering apparatus including a hopper formed with a centrally disposed outlet in its lower wall. A cylindrical metering drum is disposed in closing confrontation with the outlet and is formed with a plurality of longitudinal metering cavities for receiving a measured quantity of material from the hopper. Drive means rotates the metering drum to sequentially register the metering cavities with the outlet to receive measured quantities of material from the hopper and then dump such material as the respective cavities are rotated out of registration with the outlet.

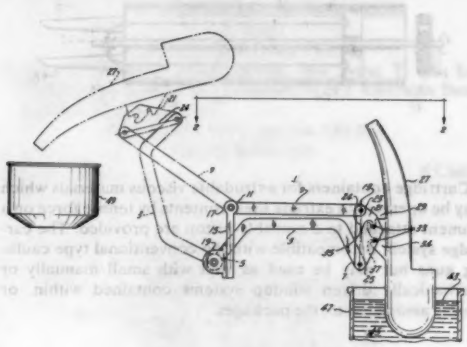
3,774,815

MECHANICAL LADLE MECHANISM HAVING FOUR-BAR CONFIGURATION

John McCarthy, 4133 Scottdale Rd., St. Joseph, Mich.

Filed Oct. 30, 1972, Ser. No. 302,350
Int. Cl. B22d *37/00*
U.S. Cl. 222—357 **12 Claims**

A mechanical ladle mechanism having a four-bar configuration. The four-bar ladle mechanism has a first bar having a first end and a second end opposite the first end, a second bar in spaced apart relationship to the first bar also having a first end and a second end opposite its first end, a third fixed bar having a first end and a second end opposite its first end, and a fourth bar in spaced apart relationship to the fixed third bar also having a first end and a second end opposite its first end. The first end of the first bar is pivotally attached to the second end of the third bar, the first end of the second bar is pivotally attached to the first end of the third bar, the first end of the



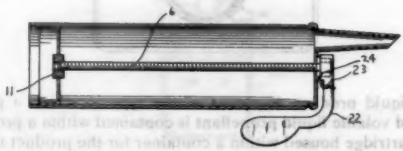
fourth bar is pivotally attached to the second end of the second bar, and the second end of the fourth bar is pivotally attached to the second end of the first bar. A ladle is removably attached to the fourth bar, the longitudinal axis of the ladle being substantially parallel to the longitudinal axis of the fourth bar. A hydraulic cylinder or rack and pinion may be operatively associated with the first bar to cause it to rotate about the pivotal mounting at its first end. The second bar and fourth bar with the ladle attached follow the rotational motion of the first or driver bar.

3,774,816

EXTRUSION PACKAGES FOR VISCOUS MATERIALS

Francis H. Bratton, c/o Aprand, Inc., F. H. Bratton, P.O. Box 345, Marion, Va.

Filed July 12, 1971, Ser. No. 161,495
Int. Cl. B67g *17/00*
U.S. Cl. 222—391 **6 Claims**



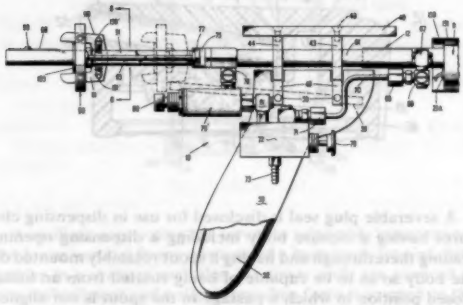
Extrusion packages for viscous materials such as caulking compounds and lubricants are provided which may be used in conventional dispensers such as caulking guns and which are prepared for or are adaptable to extrusion by a screw-type mechanism. The packages may be used as well with improved and balanced guns described in another application and lend themselves to simple utilization of power hand tools to provide extrusion. The devices permit ready simultaneous extrusion of two materials and may contain mixing sections for such operation. They are also compatible with flow control methods.

3,774,817

HOT MELT ADHESIVE APPLICATOR

Harold F. Whittaker, Haverhill, Mass., assignor to Thermotech Inc., Haverhill, Mass.

Filed Mar. 10, 1971, Ser. No. 122,898
Int. Cl. B67d 5/62
U.S. Cl. 222—334 5 Claims



A hot melt adhesive applicator for receiving a continuous solid rod of adhesive hot melt material and dispensing said adhesive material in molten form. The applicator has a hot melt adhesive heated reservoir at one end of which is a ball spring nozzle assembly for discharging molten adhesive. A tubular canal means interconnects with the reservoir for passing a solid, continuous, elongated, hot melt adhesive rod forwardly to the reservoir and preheating the rod during passage. A split tube is aligned with the canal and reciprocal gripping means act within the split tube to grip a periphery of the solid rod and push it toward the reservoir. A reciprocal motion of the gripping means moves the gripping means away from the reservoir without substantially moving the rod but moving it only slightly rearwardly to relieve pressure in the reservoir. A stop means coacts with the gripping means to prevent substantial movement of the rod during return action of the gripping means. An insulating handle mounts the device for portable use. The gripping means is preferably actuated by pneumatic pressure through at least one double acting air cylinder.

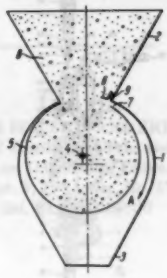
3,774,818

PROPORTIONING AND CHARGING APPARATUS

Adolf Moritsovich Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8, Moscow; Ippolit Davidovich Suladze, Prospekt Chavchavadze, 11, kv. 41; Avtandil Semenovich Kakhniashvili, ulitsa Eliava, 37, kv. 41, both of Tbilisi; Vladimir Efimovich Aglitsky, Ztasepsky val, 6/13, kv. 61, Moscow; Jury Abramovich Tsimbler, Sojuzny prospekt, 10, kv. 261, Moscow; Ilya Solomonovich Kantor, Malo-Moskovskaya ulitsa, 31, kv. 45, Moscow; Grigory Yasonovich Chidzhavadze, prospekt Chavchavadze, 11, kv. 5, Tbilisi; Vazha Venediktovich Dzhanelidze, prospekt Plekhanova, 140, Tbilisi, and Abesalom Petrovich Gigiberia, ulitsa Kobuletskaya, 21, Tbilisi, all of U.S.S.R.

Filed Feb. 25, 1971, Ser. No. 118,634
Claims priority, application U.S.S.R., Apr. 29, 1970, 1426372
Int. Cl. G01f 11/20
U.S. Cl. 222—368 2 Claims

A proportioning and charging apparatus for bulk materials is provided with a batcher arranged in the apparatus housing eccentrically so that between the batcher wall and the housing



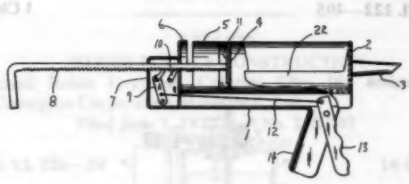
there is formed a slot diverging in the direction of the batcher rotation.

3,774,819

CAULKING GUNS WITH THE HANDLE POSITIONED ADJACENT THE DISPENSING OUTLET

Francis H. Bratton, Avon, Conn.

Filed July 12, 1971, Ser. No. 161,496
Int. Cl. B67d 5/42
U.S. Cl. 222—391 11 Claims



The subject caulking guns improve the balance and control characteristics so that operation with one hand is easily possible. The design is applicable to the conventional push type unit and to other models based on pull or screw or air driven systems. Provision has been made to move the support and control grip to a point forward of the center of the cartridge. This design is compatible with the use of power drives and flow control systems for the customary uses of caulking guns and other hand held and operated extrusion equipment.

3,774,820

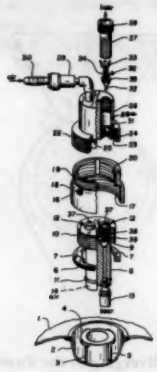
TAPPING DEVICE FOR BEER KEGS

Homer R. Zucconi, 421 Speer St., N. Belle Vernon, Pa.

Continuation-in-part of Ser. No. 190,796, Oct. 20, 1971. This application Sept. 20, 1972, Ser. No. 290,479
Int. Cl. B67d 5/54
U.S. Cl. 222—400.7 1 Claim

Beer tapping attachments comprising a permanent keg unit including two normally closed spring-biased one-way valves to which unit is detachably secured a valve body which also includes two registering spring biased one-way valves, one connected to a source of air under pressure and the other to a beer spigot. All four valves are yieldably opened when the valve body is connected to the keg unit.

There is also provide an adapter, also including two-spring biased, registering one-way valves and bores leading thereto to



accomodate the tubular prongs of a commonly used attachment, whereby when the adapter is unplugged, the valves thereof will close and prevent escape of air or beer.

3,774,821

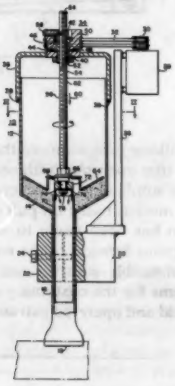
POWDER FEED DEVICE FOR NON-FREE FLOWING POWDERS

Phillip A. Liversa, Bloomfield, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1971, Ser. No. 201,908

Int. Cl. G01f *11/00*

U.S. Cl. 222—405 **1 Claim**



A powder feed device for non-free flowing powders which includes a container and a mechanically driven powder feed mechanism. The powder feed mechanism includes a centrally disposed linearly driven powder feed tube associated with a pair of rotatably and linearly driven wiper blades. The top of the powder feed tube is located just below the upper level of the powder and the wiper blades sweep the powder from the top of the container supply toward the centrally disposed tube which in turn delivers the powder out of the bottom of the container.

3,774,822

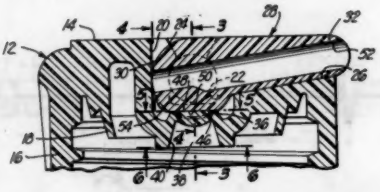
DISPENSING CLOSURE WITH INITIAL BREAKABLE DISC SEAL

Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slattersville, R.I.

Filed Mar. 16, 1970, Ser. No. 19,811

Int. Cl. B65d *47/10*

U.S. Cl. 222—541 **11 Claims**



A severable plug seal is disclosed for use in dispensing closures having a closure body including a dispensing opening leading therethrough and having a spout rotatably mounted on the body so as to be capable of being rotated from an initial closed position in which a passage in the spout is not aligned with the dispensing opening to an open position in which the passage of the spout is aligned with the dispensing opening. In a closure as disclosed, a plug is located within the dispensing opening adjacent to the spout and means are provided on the spout for engaging the plug during the initial movement of the spout from an initial closed position to an open position so as to force the plug from the dispensing opening so that fluid can flow through the dispensing opening and the passage in the spout. The plug may be formed integrally with the closure body.

3,774,823

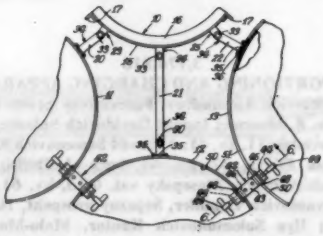
MULTIPLE DRUM CARRIER

John L. Hoellerich, Wilmette, Ill., assignor to Slingerland Drum Co., Chicago, Ill.

Filed Dec. 2, 1971, Ser. No. 204,122

Int. Cl. G10g *5/00*

U.S. Cl. 224—5 S **14 Claims**



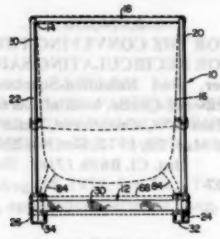
A carrier for carrying a plurality of musical drums on the person of a drummer. The carrier includes means for adjustably mounting the drums on a support member resting against the front of the person for improved positioning of the drums for play by the drummer. The carrier is arranged to dispose the drums with the upper beating head substantially in a common plane with a preselected spacing therebetween while permitting the drums to have different diameters and axial lengths.

3,774,824

RELEASABLE CONNECTING BAR FOR CHILD CARRIER

Margaret S. Hansson, Boulder; Gerald A. Cunningham, Ward, and Albert W. Gebhard, Boulder, all of Colo., assignors to Gerico, Inc., Boulder, Colo.

Filed Dec. 16, 1971, Ser. No. 208,753
Int. Cl. A47d 13/02
U.S. Cl. 224—6 12 Claims



A resilient connecting bar serves to releasably interconnect the lower vertical frame portions of a back pack type of child carrier in a manner such that the lower ends are covered in one embodiment and a slight spreading force is exerted on the vertical frame portions to rigidly unite the frame portions; and, in cooperation with a flexible strap or belt which contacts the lower back of the user, the connecting bar more effectively transmits the load of the carrier into the lower back or pelvic region.

3,774,825

BACK PACK FOR UNDERWATER BREATHING APPARATUS AND THE LIKE

Henry L. Schone, Newport Beach; William W. Geer, Capistrano Beach; Stephen C. Laxineta, Yorba Linda, and Clayton W. Koistinen, La Habra, all of Calif., assignors to said Schone and Geer, by said Laxineta and Koistinen

Filed July 31, 1972, Ser. No. 276,842
Int. Cl. A45f 3/00
U.S. Cl. 224—25 A 9 Claims

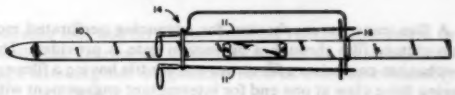
A pack for carrying compressed air or gas-filled cylinders on the back of a human body comprising a flat, rigid frame; first and second substantially U-shaped, rigid, shoulder engaging hangers pivotably connected to an upper portion of the frame; a hip or waist surrounding and engaging belt having disengagable belt portions and belt fastening means securing the belt portions together; and a rectangular fabric sheet connected between a lower portion of the frame and the belt. The upper end of the fabric sheet is connectable at any one of a plurality of positions along the frame with the remainder of the fabric sheet extending downwardly. The lower end of the fabric sheet is fixedly connected to the belt. Finally, any one of a plurality of intermediate positions along the fabric sheet is connectable at any one of a plurality of positions along the lower portion of the frame to adjust the overall length between the hangers and the belt and also the length between the belt and the selected position along the lower portion of the frame.

3,774,826

CARRIER FOR SKIS AND SKI POLES

Toni R. Raihill, 7102 Heatherton Trl., and Sharon D. Robinson, 7104 Heatherton Trl., both of Edina, Minn.

Filed Sept. 9, 1971, Ser. No. 179,093
Int. Cl. B65d 69/00
U.S. Cl. 224—55 4 Claims



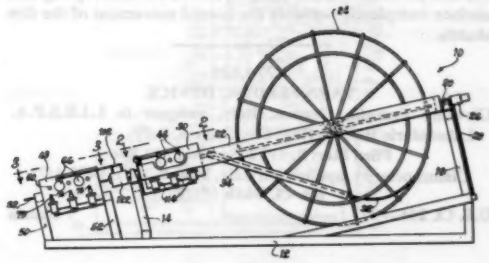
A pair of overlaying skis are held together by a strap wrapped around the skis and by slipping the rear edges through an opening in another strap which serves the additional function of a hand or shoulder strap for carrying the skis. The carrier may also have openings for accommodating the pointed ends of ski poles which can then be conveniently carried along with the skis.

3,774,827

POWER RODDER CONSTRUCTION

Michael Robin Graybeal, Calumet City, Ill., assignor to Champion Corporation, Hammond, Ind.

Filed June 1, 1972, Ser. No. 258,707
Int. Cl. B65h 59/00
U.S. Cl. 226—50 16 Claims



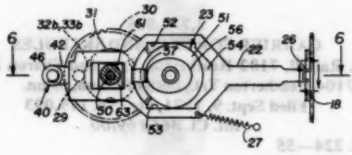
An apparatus for extending and retracting rod and similar lengths of material, the lengths being moved between opposed driven rolls. Drive means for the rolls comprise first and second motor means with each motor means serving to operate a distinct set of rolls. Control means are provided whereby one set of rolls is driven upon extension of the lengths with both set of rolls being driven during retraction of the lengths whereby considerably increased power is available during retraction. Means are provided for automatically varying the engaging pressure of the drive rolls in response to power requirements.

3,774,828

STEP MOTION PROJECTOR

Robert E. Lach, Beaverton, and Jack A. Baldwin, West Linn, both of Oreg., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,429
Int. Cl. G03b 1/22
U.S. Cl. 226—66 10 Claims



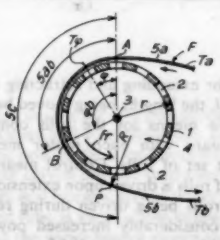
A film transport mechanism for advancing perforated motion picture film through a projection gate is provided. The mechanism comprises a film transport shuttle having a film engaging drive claw at one end for intermittent engagement with the perforations of the film, and a single motor-driven rotatable cam to effectuate both horizontal and vertical motion for the shuttle. The cam engages a pair of horizontally disposed cam follower surfaces mounted within an opening formed in the center of the shuttle to effectuate vertical motion thereof, and also engages a vertically disposed projection on the rear of the opening in the shuttle to effectuate horizontal motion to withdraw the claw from the film perforations. Slow motion and still projection are accomplished by means of a speed selector cam having a series of intercepting cam surfaces each representing a different projection speed, which cam is linked by means of a suitable gear train to the main drive cam. The selector cam rotates at a speed which is a fraction of the speed of the main drive cam and is positioned so that the intercepting cam surfaces may be selectively moved into engagement with a cam follower mounted on the end of the shuttle opposite from the claw to intercept the inward movement of the shuttle, and thus intermittently prevent its engagement with the film perforations. The number of lobes or valleys on each of the intercepting cam surfaces determines the frequency with which the claw on the shuttle will be permitted to engage the film perforations. For still projection, the intercepting cam surface completely prevents the inward movement of the film shuttle.

3,774,829

YARN FEEDING DEVICE

Giovanni Francia, Genova, Italy, assignor to L.I.R.S.P.A. Laboratorio Italiano Ricerche, Genova, Italy

Filed Mar. 8, 1972, Ser. No. 232,846
Claims priority, application Italy, Mar. 8, 1971, 9402 A/71
Int. Cl. B65h 17/32
U.S. Cl. 226—97 7 Claims



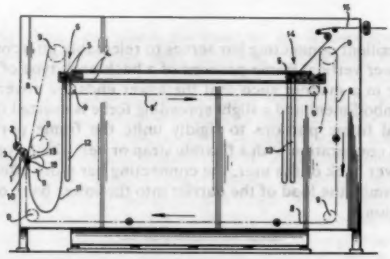
A yarn is wrapped around a portion of a rotary element which is rotating in the direction of feed. The periphery of the rotary element includes a plurality of openings through which an air stream is induced, the air stream tending to urge the yarn out of engagement with the rotary element, whereby the tension and frictional effect on the yarn around the rotary element may be varied in response to downstream conditions in order to obtain constant tension in the yarn being delivered to downstream machines regardless of the tension on the yarn as it is received at the rotary element from a supply source.

3,774,830

APPARATUS FOR THE CONVEYING THROUGH A PATH AND FOR RECIRCULATING SAID RODS

Wolfgang Koster, Bad Salzuflen-Schotmar, and Harald Jentzsch, Brackwede-Quelle, both of Germany, assignors to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed Mar. 28, 1972, Ser. No. 238,951
Int. Cl. B65h 17/42
U.S. Cl. 226—107 5 Claims



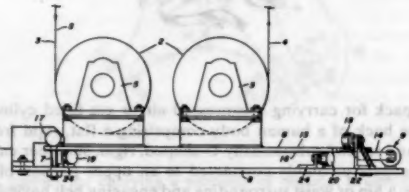
A conveying system for supporting rods in a festoon steamer in which a web of material is suspended in loops upon said rods which are travelling upon a horizontal track, a feed-in mechanism being provided at the entrance of the track for gradually advancing the rods and a second mechanism being operative at the end of the track for discharging one by one the advanced rods.

3,774,831

STEERING ROLL ASSEMBLY FOR CONTINUOUS STRIP MILL

Terry E. Paradine, Gary, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed June 26, 1969, Ser. No. 836,711
Int. Cl. B65h 17/20
U.S. Cl. 226—194 3 Claims



An apparatus for centering strip moving continuously through a mill or processing line, comprising the combination with a steering roll assembly having a pivotally mounted frame for controlling the strip-steering action of a guide roll

mounted thereon, of a mechanism for guiding the pivotal movement of the frame and for holding it against tilting movement by the tension in the strip travelling over the guide roll. The control frame is preferably in the form of a flat plate, and its guide mechanism comprises rollers engaged with opposite sides thereof which hold it in a plane perpendicular to its pivot axis.

3,774,832

DEVICE FOR DRIVING FASTENING ELEMENTS SUPPLIED IN HOLDER STRIPS

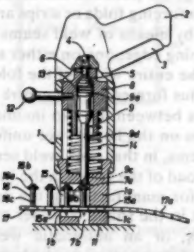
Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft

Filed Aug. 24, 1971, Ser. No. 174,434

Claims priority, application Germany, Aug. 28, 1970, P 20 42 767.2

Int. Cl. B25c *1/14*

U.S. Cl. 227—10 3 Claims



In a device for driving fastening elements, such as nails and the like, into a target material, the device has an axially extending bore through which the fastening elements are driven with explosive force by means of a piston and a channel perpendicularly intersects the forward end of the bore for guiding a holder strip supporting the fastening elements through the bore so that the fastening elements can be axially aligned into position to be driven by the piston. The forward or muzzle end of the bore has a larger diameter than its rearward end. The rearward end of the bore serves as a guide for the piston while the forward end guides the fastening elements to be driven from the device. The length of the channel in the axial direction of the bore is sufficient to receive and guide the entire length of the fastening element into the bore. Further, the channel has two pair of guide grooves, one for the holder strip and the other for the head of the fastening element.

3,774,833

SHOCK ABSORBING FASTENING TOOL ASSEMBLY

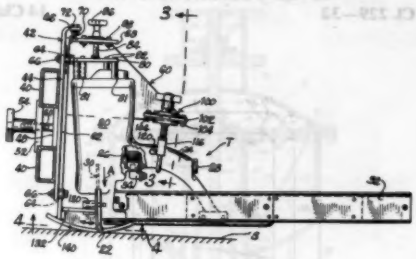
Dushan Carl Deshich, Elmhurst, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed July 21, 1972, Ser. No. 273,959

Int. Cl. B27F *7/02*

U.S. Cl. 227—156 14 Claims

A shock absorbing mount for a fastening tool such as a pneumatic nailer which is especially useful in applications where a plurality of pneumatic fastening tools are used simultaneously. Each tool is mounted on elastomeric diaphragm members for limited resilient shock absorbing movement in a direction parallel to the stroke of the driver blade of the fastening tool and for limited resilient rocking movement forwardly and rearwardly of the driving end of the driver blade. Each fastening tool is separately secured to a frame assembly.



3,774,834

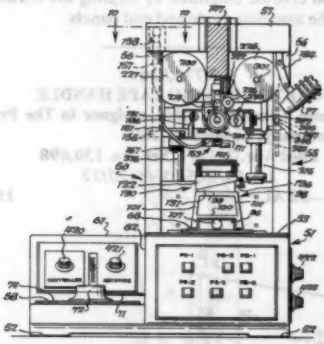
BONDING APPARATUS

James A. Holler, Tonawanda, and Eric F. Waeldchen, Williamsville, both of N.Y., assignors to J and A Keller Machine Co., Inc., Tonawanda, N.Y.

Filed July 20, 1971, Ser. No. 164,252

Int. Cl. B23k *21/00*

U.S. Cl. 228—3 16 Claims



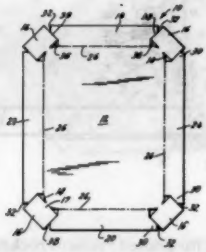
A bonding apparatus and method for simultaneously bonding the leads of a beam-leaded device uniformly to conductive pads on a substrate. A continuous strip of metal consisting of a plurality of heat and pressure transmitting members is intermittently fed to a rotatable bonding head having a plurality of bonding tools. Each transmitting member is adapted to be interposed between the bonding tool and the leads of the beam-leaded device to evenly distribute and transmit bonding forces to such leads to effect uniform and simultaneous bonding thereof to their connections. A crimping device coacts with the bonding tools to partially deform a transmitting member about its respective tool prior to bonding.

3,774,835

CONTAINER CONSTRUCTION AND CONTAINER BLANK

Alfred C. Monaghan, Warren, N.J., assignor to Monaghan Automated Systems, Inc., Green Brook, N.J.

Filed Oct. 27, 1971, Ser. No. 193,025
Int. Cl. B65d 5/26, 5/36, 71/00
U.S. Cl. 229—32 14 Claims



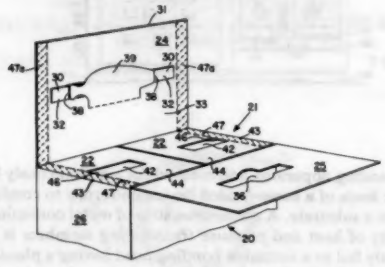
A container blank comprises a one piece sheet of paper board, fibre board and similar material which includes a central bottom forming panel having rounded corner portions formed by score lines which separates each side and end portion of the bottom from substantially coextensive side and end flaps formed on the exterior of the score lines. Each rounded corner is provided with a rounded slot cutout which defines a rectangular securing tab or flap joined at the center of the rounded corner to the bottom panel. The blank is erected into a container by orienting the side and end flaps upwardly by bending them about the score line connections to the bottom panel and then by bending the rectangular flap upwardly to close the slot formed between adjacent ends of the side and end panels. The side and end panels are either abutted at the rounded corners or spaced apart, but in each case they are overlapped by the securing flaps. The complete container is held in a rigid erected condition by stapling the corner securing flaps to the associated side and end panels.

3,774,836

CARTON HAVING TAPE HANDLE

Frank C. Nunn, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Apr. 2, 1971, Ser. No. 130,698
Int. Cl. B65d 5/46, 25/22
U.S. Cl. 229—52 AL 15 Claims



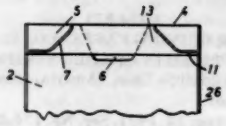
A rectangular tubular carton having an adhesively bonded, four-flap top closure incorporating a tape handle in combination with tape end accommodating receptacles in the carton's flaps whereby improved anti-sift sealing of granular materials and the like is effected.

3,774,837

CARRYING BAG PROVIDED WITH A HANDLE

Otto Elving Franson, Jonkoping, Sweden, assignor to Munksjo Aktiebolag, Jonkoping, Sweden

Filed July 1, 1970, Ser. No. 51,624
Claims priority, application Sweden, Jan. 20, 1970, 632/70; Feb. 20, 1970, 2166/70
Int. Cl. B65d 33/08
U.S. Cl. 229—54 R 3 Claims



The carrier bag is of the type having two wide sides and a folded bottom and it is manufactured from a tubular synthetic resin web. At the open end the bag is provided with reinforcing folds or reinforcing strips extending transversely of the bag. Grip openings are punched out in the centre of the opening edge. The reinforcing folds or strips are welded to the wide sides of the bag by means of weld seams extending obliquely towards the opening edge, one on either side of the grip opening, and across the entire width of the folds or strips. The carrying grips are thus formed by the centre part of the reinforcing folds or strips between the two inclined weld seams. Consequently stresses on the handle are uniformly distributed on the four weld seams, in that each weld seam need only absorb a quarter of the load of the goods in the bag.

The machine for manufacturing the carrier bag comprises folding elements in the shape of folder rails for providing the reinforcing folds, or an automatic welding apparatus for securing the reinforcing strips to the bag. It also comprises a puncher for cutting out the grip openings and a welding device for producing the oblique weld seams on the folds or strips. The machine also includes a means for slitting open the tubular synthetic web in the longitudinal direction thereof.

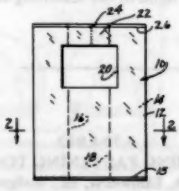
The invention also includes a method for the manufacture of the carrier bag.

3,774,838

PLASTIC BAG CONSTRUCTION

Eugene P. Christie, Park Ridge, Ill.

Filed Oct. 12, 1971, Ser. No. 188,142
Int. Cl. B65d 33/16
U.S. Cl. 229—62 7 Claims



An embodiment of the invention disclosed herein comprises a plastic bag construction having tie portions formed as an integral part of the bag which are used to close the top of the bag when filled. The bag is formed of a flattened flexible plastic

tube having front and back panels and folded in portions extending along the side edges of the panels. A weld is formed along the bottom edges of the panels to close the bag and a weld is formed along the top edges of the panels to hold together the front and back panel portions which form the tie portions. A struck out portion is formed through the front and back panels near the top edges thereof and the material between the struck out portion and the top edges of the panels will form the integral tie portions.

3,774,839

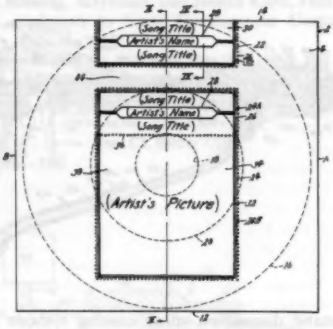
JACKET FOR PHONOGRAPH RECORDS

Warren H. Woods, Rt. 1, Shawnee, Kans.

Filed Feb. 23, 1972, Ser. No. 228,609

Int. Cl. B65d *27/00, 27/04*

U.S. Cl. 229—68 R **3 Claims**



A jacket for phonograph records consisting of an envelope adapted to contain and protect a record, said envelope having portions detachable therefrom for use as advertising display or cataloging matter. The detachable portions may be separated from the envelope selectively either to leave the envelope completely intact, or so as to form window openings in said envelope. The window openings may serve, for example, to permit viewing and reading of the record label, or to provide a finger notch permitting gripping of the record for removal thereof from the jacket.

3,774,840

CENTRIFUGAL SEPARATOR

Donald E. Boatright, Tulsa, Okla., assignor to Environs Development Inc., Tulsa, Okla.

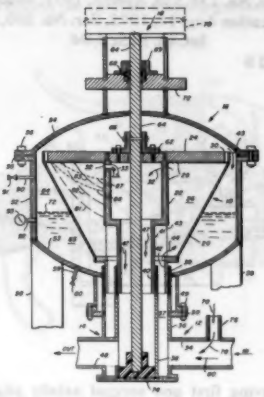
Filed Jan. 17, 1972, Ser. No. 218,149

Int. Cl. B04b *15/02*

U.S. Cl. 233—14 R **9 Claims**

This invention describes a centrifugal separator which comprises a rotating chamber in the shape of an inverted truncated right circular cone with an inner cylinder providing a vertical downward-going circuit. The chamber is divided into a plurality of sectors by radial triangular walls and has a circular top plate which seals the large end of the chamber. The rotating chamber is surrounded by a closed housing. In the lower end of the housing are two concentric pipes, an outer and an inner pipe.

The fluid to be separated enters and flows upwardly in the annular space between the outer and inner pipes and enters the rotating chamber. Here it is held in the separate sectors by the dividers, where it is rapidly rotated. As the fluid rises in the chamber, it is separated horizontally, the denser portions moving to the outer radius of the chamber, and the less dense portions moving to the inner wall. There are a plurality of holes in the top plate at the outer extremity of the chamber. There is also a plurality of holes near the top of the inner wall. The dense portion of the fluid moves upwardly and passes through the holes in the cover plate and into the housing, while the less dense components flow through the openings in the inner wall



and pass downwardly through the inner pipe to an outlet. There is a drain pipe and valve in the bottom of the housing so that the dense fluid can be drawn off at that point.

3,774,841

COUNTING DEVICE

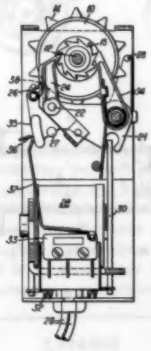
John Hayward Cook, Sawbridgeworth, England, assignor to English Numbering Machines Limited, London, England

Filed Aug. 30, 1971, Ser. No. 175,900

Claims priority, application Great Britain, Oct. 7, 1970, 47,672/70

Int. Cl. G06c *27/00, 23/00*

U.S. Cl. 235—1 C **6 Claims**



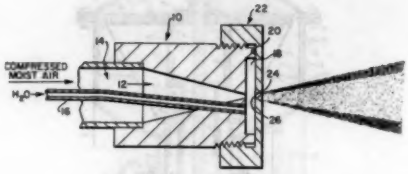
The invention relates to an electro-mechanical preselection counter having a ratchet stepping mechanism. A novel mounting of the drive pawls holds them clear of the ratchets for the digit wheels when not actually driving these wheels. This allows the digit wheels to be freely rotated in either direction for presetting.

3,774,842

METHOD OF PRESERVING ICE NUCLEI FOR SNOW FORMATION

Wallace E. Howell, Lexington, Mass., assignor to Hedco, Inc., Bedford, Mass.

Division of Ser. No. 131,320, April 5, 1971, abandoned. This application Aug. 14, 1972, Ser. No. 280,237
Int. Cl. F25c 3/04
U.S. Cl. 239—2 S 6 Claims



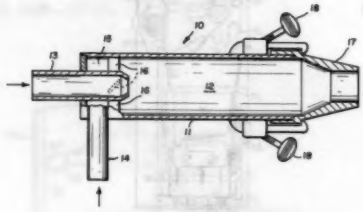
A nozzle having first and second axially aligned orifices spaced apart. An annular disc-like chamber is disposed between and surrounds the orifices. A carrier fluid, such as compressed air, is discharged from the first orifice, through the chamber and from the second orifice which results in an airstream containing ice nuclei. A liquid, such as water, flows through the chamber in thin-film form and into the carrier fluid flowing through the chamber. The liquid then flows across the peripheral edge of the second orifice and is broken up into droplets of substantially uniform size which are dispersed in the airstream.

3,774,843

SNOW GUN

Bruce A. Rice, 6 Dorset Dr., Canandiaqua, N.Y.

Continuation-in-part of Ser. No. 215,589, Jan. 5, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,576
Int. Cl. F25c 3/04
U.S. Cl. 239—14 11 Claims



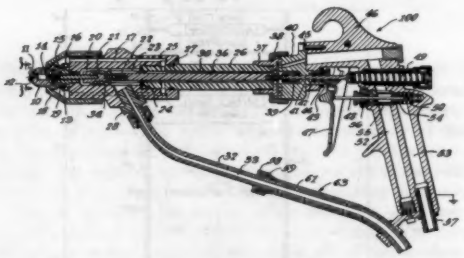
A snow gun directs high pressure air through an input nozzle axially into a mixing chamber, and directs water into a vortex chamber surrounding the air nozzle so that the water spins in a vortex around the air input nozzle. The spinning water flows into the mixing chamber to spin around the periphery of the mixing chamber and around the air nozzle blast. This thoroughly mixes the air and water, and the mixture is directed through an output nozzle into the atmosphere. The output nozzle has a generally cylindrical bore having an inside diameter about one-half the inside diameter of the mixing chamber with the nozzle bore length being approximately equal to the nozzle bore diameter, and a conical surface leads from the mixing chamber to the nozzle bore and is inclined 25° – 30° from the axis of the mixing chamber.

3,774,844

ELECTROSTATIC DEPOSITION COATING SYSTEM

Arvid C. Walberg, Lombard, Ill., assignor to Arvid C. Walberg & Co., Downers Grove, Ill.

Continuation of Ser. No. 24,104, March 31, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,523
Int. Cl. B05b 1/02
U.S. Cl. 239—15 59 Claims



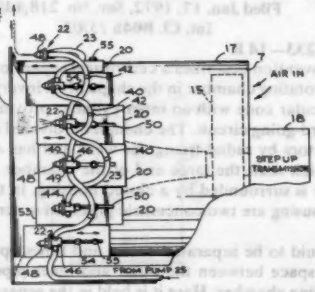
Electrostatic disposition spray coating systems in which water base paints, teflon coatings and other highly conductive materials are sprayed utilize the conductive fluid in a paint conduit of insulating material for connecting an ionizing electrode to the high voltage power supply of the system. Higher operator safety is accomplished by mixing the conductive coating material fluid and air internally prior to rejecting it through an air cap and by limiting the exposed portion of the ionizing electrode to a short needle point or knife edge.

3,774,845

ORCHARD SPRAYER

Henry Folkert, Granger, Wash., assignor to Bank of Sunnyside, an Office of Bank of Yakima

Filed Oct. 30, 1972, Ser. No. 301,980
Int. Cl. A01n 17/08
U.S. Cl. 239—78 11 Claims



An orchard sprayer unit mounted on a trailer which discharges a radial spray about the rearward end of the unit to spray adjacent trees and crops is described. A novel arrangement of shutters are provided about the discharge end of a fan

unit to control the discharge direction and velocity of the spray in desired sectors of the radial discharge. The liquid to be sprayed is atomized by injecting a stream of liquid perpendicularly at low pressure past the edge of the shutter into the high velocity air flow being radially discharged about the rear of the unit. The air flow tears the liquid stream from the edge of the shutter, uniformly atomizes the stream and projects the droplets into the crop being treated. Each shutter is provided with a nozzle for spraying the liquid at low pressure, so by selection of shuttering and nozzle size, virtually any radial spray pattern with portions of varying concentration and velocity can be obtained permitting, for example, an upper portion of a tree to receive a greater amount of spray treatment than the lower portion.

3,774,846

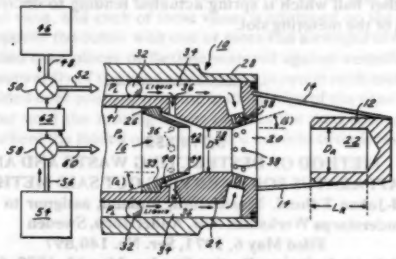
PRESSURE WAVE ATOMIZING APPARATUS

Robert E. Schurig, Maywood, and Joseph Korn, Fort Lee, both of N.J., assignors to Sonic Development Corporation of America, Yonkers, N.Y.

Division of Ser. No. 889,596, Dec. 31, 1969, Pat. No. 3,677,525, which is a continuation-in-part of Ser. No. 699,109, Jan. 19, 1968, abandoned. This application Jan. 17, 1972, Ser. No. 218,438

Int. Cl. B05b *7/00*

U.S. Cl. 239—102 **5 Claims**



Fluids to be mixed and atomized are fed into a converging-diverging nozzle which directs them towards a cavity member. In one embodiment of the invention, liquid is forced through the central opening of the nozzle, and gas is injected into the liquid at a plurality of points around the liquid stream through an inclined baffle structure near the converging portion of the nozzle. In another embodiment, air is fed into the central opening of the nozzle, and liquid through the baffle structure, as well as downstream from the baffle structure. The liquid supply flow rate and the gas supply pressure are regulated so that the input gas pressure is greater than the minimum liquid pressure but less than the maximum liquid pressure. The upstream liquid feed passageway is effectively closed at low flow rates, while being open at high flow rates, thus enabling the maintenance of relatively high liquid back-pressures for accurate flow rate control over a wide range of flow values.

3,774,847

ASPIRATOR NOZZLE FOR BLOW GUNS OR THE LIKE

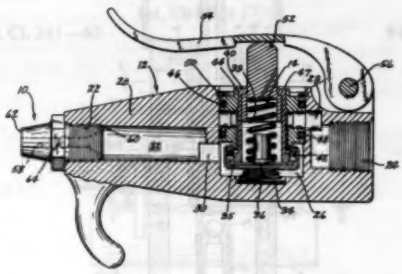
Jerry P. Malec, 7057 Maple, Omaha, Nebr.

Filed Jan. 17, 1972, Ser. No. 218,432

Int. Cl. B05b *7/08*

U.S. Cl. 239—124 **9 Claims**

An aspirator nozzle for a blow gun is disclosed herein. The nozzle includes an air passageway extending from the inlet end to the outlet end thereof. The nozzle also includes an aspirator bore which extends through the nozzle transversely to the air passageway and which communicates therewith. The preferred embodiment utilizes a single aspirator bore which extends completely through the nozzle transversely to the air passageway. A modified form of the nozzle utilizes a plurality of aspirator bores which extend radially outwardly and rearwardly from the air passageway. In both of the embodiments, the aspirator bore communicates with the air passageway at the location wherein the air flow has the greatest velocity as it passes through the nozzle. The nozzle may be used with a blow gun having a pressure regulated, manually operated valving. The nozzle may also be used with a blow gun having a poppet type, manually operated valve means. In the latter environment, an air restrictor means is placed in the blow gun between the valve means and the nozzle.



3,774,848

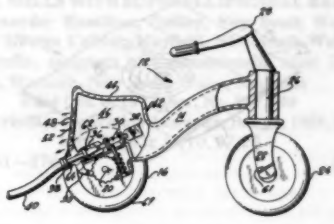
WATER DRIVEN VEHICLE

Richard Herrick, 19401 N.W. 8th Ave., North Miami, Fla.

Filed July 24, 1972, Ser. No. 274,439

Int. Cl. B05b *3/00*

U.S. Cl. 239—191 **6 Claims**



A water driven tricycle especially for use by children for play and serving a secondary purpose of watering a lawn. The water cycle includes a carriage and a paddle wheel with holding means on the cycle to hold the end of a garden hose and to direct a stream of water from the hose against the paddles to transmit power through a transmission means to the axle of the vehicle to cause it to move over the ground while the sprayed water is dispersed in a pattern over the lawn.

3,774,849

ATOMISERS FOR PERFUME AND OTHER LIQUIDS

Michel Boris, Paris, France, assignor to Societe Technique de Pulverisation, Paris, France

Filed Aug. 10, 1972, Ser. No. 279,664

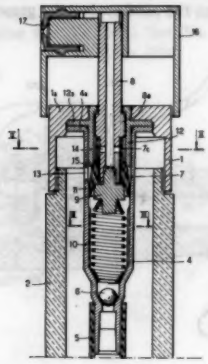
Claims priority, application France, Aug. 19, 1971, 7130271

Int. Cl. A61m *11/06*

U.S. Cl. 239—338 **3 Claims**

An atomiser for dispensing perfume or other liquid comprises a pump in the form of a piston slidable in a cylinder,

liquid being discharged only when a predetermined pressure exists within the cylinder. Ridges on the inner surface of the cylinder cause deformation of the piston at the end of its compressive stroke; such deformation causes air-escape passages to be formed between the piston and cylinder to facilitate priming of the pump.



3,774,850

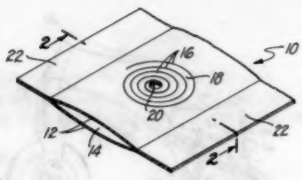
WATER DISTRIBUTING TUBE

David G. Zeman, 10030 Greenleaf Ave., P.O. Box 3021, Santa Fe Springs, Calif.

Filed July 10, 1972, Ser. No. 270,456

Int. Cl. B05b *15/00*

U.S. Cl. 239—542 **13 Claims**



A tube for agricultural uses in distributing water to plants located along the length of the tube can be constructed utilizing a continuous tube of a thermoplastic, preferably biodegradable polymer. Such a tube includes a plurality of outlet openings located along its length and means securing the interior walls of the tube together adjacent each of the outlet openings so as to restrict the flow of water to each of the outlets. Such a tube may be conveniently shipped in a flat, coiled configuration. Preferably the walls of the tube are thin enough to be broken up by normal agricultural instruments such as plows.

3,774,851

FUEL HEAD COMPENSATING VALVE FOR FUEL INJECTION NOZZLE

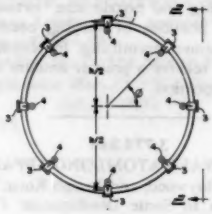
Harold C. Simmons, Richmond Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 109,113, Jan. 25, 1971. This application Nov. 15, 1972, Ser. No. 306,615

Int. Cl. F16k *15/04;* **F02g** *3/00;* **B05b** *1/14*

U.S. Cl. 239—551 **7 Claims**

Flow metering valves for use in conjunction with fuel sprayer nozzles mounted on vertical ring manifolds characterized in that the valves compensate for difference in fuel head around the manifold by equating the effects of the masses of the valve operating parts according to the angular positions of the respective valves around the manifold thereby compensating for the differences in fuel head with reference to a datum pressure in a horizontal plane passing through the center of the manifold. The valves herein are further characterized in that the movable valve parts whose masses balance fuel head differences around the fuel manifold comprise a plurality of balls to minimize sliding friction, one of the balls of each valve constituting a metering valve member which moves in the valve to vary the area of a metering slot therein, said ball being thus moved by fuel pressure while in contact with another ball which is spring actuated tending to decrease the area of the metering slot.



3,774,852

METHOD OF DESTRUCTING WASTE AND AN APPARATUS FOR CARRYING OUT SAID METHOD

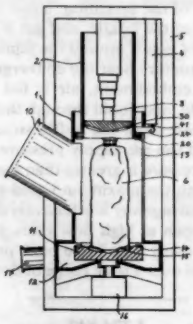
Karl-Johan Edlund, Mariehamn, Finland, assignor to AWAB Anderstorps Werkstads A/B, Anderstorp, Sweden

Filed May 6, 1971, Ser. No. 140,897

Claims priority, application Sweden, May 12, 1970, 6444/70

Int. Cl. B02c *18/40*

U.S. Cl. 241—3 **3 Claims**



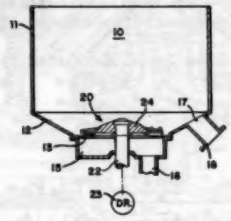
A method of destruction of waste and a destructor for carrying out said method, in which the collected waste is compressed by a piston in a collecting room, and pressed towards a rotating, grinding disc provided with cutting edges which disintegrates the waste while it is still under pressure, and throws the disintegrated waste out through an outlet opening where disinfectant is added and the waste is collected for utilization as filling material or for manufacturing of bricks or briquettes.

3,774,853

PULPING APPARATUS FOR WASTE MATERIAL

Peter Seifert, Middletown, Ohio, assignor to Black Clawson Fibreclaim, Inc., New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,950
Int. Cl. B02c *13/18*
U.S. Cl. 241—46.11 10 Claims



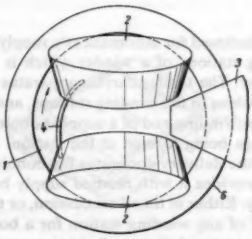
A pulper or similar device for comminuting solid materials includes a vaned rotor having some of its vanes equipped with cutter bars arranged to move past complementary stationary cutter bars in shearing relation. The device is particularly designed to select and cut flexible materials by causing them to fold over the leading edge of each moving cutter and its associated vane, and each of these vanes is equipped on the surface opposite the cutter with one or more fins arranged to hold the folded over pieces of flexible material against centrifugal travel outwardly of the vane and thereby to retain such material in folded over position over the leading edge of the vane and its cutter until the moving cutter reaches the next stationary cutter where the folded over material is cut into two pieces.

3,774,854

BREAKER ROLL MILL

Franz Poeschl, Reutlingen, Germany, assignor to Loesche Hartzerkleinerungs- und Zement-Maschinen KG, Dusseldorf, Germany

Continuation of Ser. No. 43,164, June 3, 1970, abandoned.
This application July 10, 1972, Ser. No. 270,162
Int. Cl. B02c *13/14*
U.S. Cl. 241—52 7 Claims



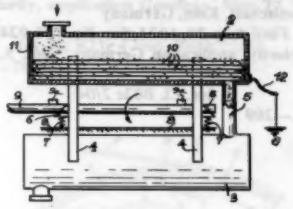
Breaker roller mill with horizontally rotating grinding plate and two rotating grinding rollers in a stationary position and a stock food apparatus and on the opposite side of this apparatus a stationary baffle wall extending in curvilinear form in the direction of the grinding path and in the direction of rotation of the grinding plate and whose height permits the stock/gas mixture to flow over said baffle.

3,774,855

GRINDING METHOD AND VIBRATING MILL FOR PERFORMING THIS METHOD

Manfred Wolf, Jexuhle, Germany, assignor to Klocher-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Oct. 12, 1971, Ser. No. 188,002
Claims priority, application Germany, Oct. 10, 1970, P 20 49 848.0
Int. Cl. B02c *17/14*
U.S. Cl. 241—65 3 Claims



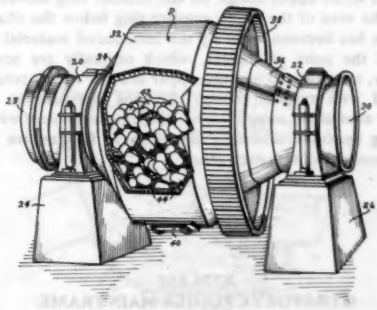
A device is described for fine grinding of plastics in which the horizontally mill is charged with the plastic to be ground and with liquid nitrogen for making the plastic brittle. The grinding chamber contains an assembly of loose grinding rods. The rods are somewhat shorter than the length of the grinding chamber, whereby during the operation of the mill at least a few of the rods will strike against the end walls of the grinding chamber and transfer to these end walls, which are grounded, the electrostatic charges formed on the surface of the particles of the ground plastic and which by said rods are conducted to said end walls and from there to the ground.

3,774,856

BALL MILLS WITH SUPERELLIPSOIDAL BALLS

Frank Alexander Hamilton, Dudley, New South Wales, and Thomas George Calcott, Mayfield, New South Wales, both of Australia, assignors to Commonwealth Steel Company Limited, Waratah, New South Wales, Australia

Filed Oct. 6, 1971, Ser. No. 187,049
Claims priority, application Australia, Jan. 12, 1968, 32310/68
Int. Cl. B02c *17/10*, *17/20*
U.S. Cl. 241—176 6 Claims



A ball type grinding mill, in which the balls are superellipsoids of such a shape that the surface of the ball in each octant of a Cartesian coordinate system has x, y and z axes which are defined by the formula -

$$\left(\frac{x}{a}\right)^{n_1}+\left(\frac{y}{b}\right)^{n_2}+\left(\frac{z}{c}\right)^{n_3}=1,$$

wherein a, b, c, n_1, n_2 and n_3 are constants, a is unequal to b, and n_1, n_2 and n_3 each have a minimum value greater than 2.

Preferably n_1, n_2 and n_3 each have a maximum value of 4 and most preferably in the range 2.1–4.0. It is also preferable that the ratio between at least two of the constants *a*, *b* and *c* be greater than 1 and less than 2, and more particularly the ratio between *a* and *b* may advantageously equal 4 to 3 when *b* equals *c*.

3,774,857

LARGE GYRATORY CRUSHER

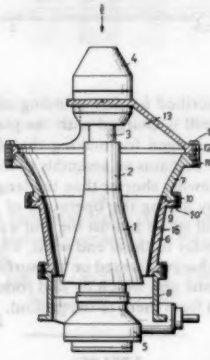
Hanns Decker, Cologne, and Helmut Stockmann, Wesseling, both of Germany, assignors to Klochner-Humboldt-Deutz Aktiengesellschaft, Koln, Germany

Filed Aug. 30, 1971, Ser. No. 176,024

Claims priority, application Germany, Sept. 5, 1970, P 20 44 140.1

Int. Cl. B02c *2/04*

U.S. Cl. 241—209 **3 Claims**



A large gyratory crusher is provided with a crusher shell comprising an upper crusher ring, forming a preliminary crusher space, and a crusher ring therebelow forming the main crusher space. A low traverse forming a hood provided at one side with a charging aperture and also supporting the upper self-aligning bearing for the upper end of the driven shaft which carries the crusher cone is releasably attached with a flange to a flange on the upper end of the upper crusher ring. The latter has also a flange on its lower end which is releasably attached to an upper flange on the crusher ring therebelow. When the area of the upper crusher ring below the charging aperture has become worn by the introduced material to be crushed the pairs of flanges, which normally are screwed together, are released and the upper crusher ring is rotatably adjusted with respect to the charging aperture to bring another area of the upper crusher ring into alignment with the charging aperture, and then the pairs of flanges are again firmly connected with each other.

3,774,858

GYRATORY CRUSHER MAIN FRAME

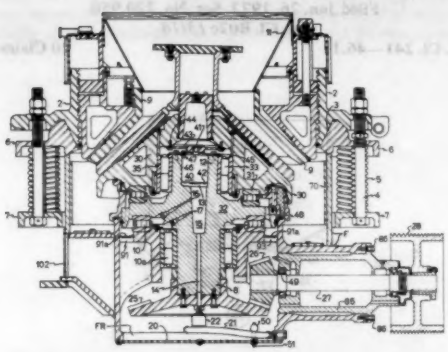
Fred Curtis Archer, Whitefish Bay; Ronald B. Dedlemar, Brown Deer, and Edward H. Breiling, West Allis, all of Wis., assignors to Barber-Greene Company, Aurora, Ill.

Filed Dec. 27, 1971, Ser. No. 212,230

Int. Cl. B02c *2/00*

U.S. Cl. 241—285 R **8 Claims**

A gyratory crusher for crushing rock for example, and which has a generally conical crushing head rotatably mounted on an upright eccentric so that the head is gyrated upon rotation of the eccentric. The main frame of the crusher is fabricated from an inner portion comprising a central cast-



ing, and an outer portion fabricated from a steel wall and an upper, cast ring, the two portions being welded together.

3,774,859

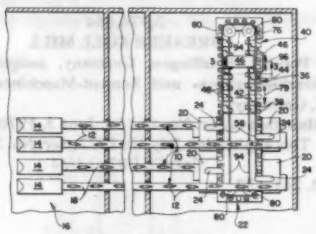
BOBBIN HANDLING SYSTEM

Charles W. Brouwer, East Greenwich, and John Nelson, North Kingstown, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed July 3, 1972, Ser. No. 268,759

Int. Cl. B65h *54/26*

U.S. Cl. 242—35.5 R **22 Claims**



A system is disclosed for automatically supplying filled bobbins to winding stations of a winder which is serviced by a patrolling tender. The tender carries apparatus for delivering filled supply bobbins to the winding stations, and has a knotter for uniting the unwinding end of a supply bobbin with the yarn end of a package being formed at the station. Responsive to the demand of the delivery apparatus for bobbins, a distributing conveyor provides it with readied supply bobbins from a source of supply. Either in timed succession, or responsive to a sensed demand of any winding station for a bobbin, or both, the delivery apparatus delivers a bobbin to a reserve bobbin position at the station, with the unwinding end of the bobbin positioned for retrieval by the knotter. After a bobbin is unwound at a station it is ejected from the station and the reserve bobbin is moved into the unwinding or active position as its unwinding end is united with the package end. The ejected bobbin is conveyed to a sorter system and if it still carries sufficient yarn, it may be returned to a winding station, as previously described. If the bobbin is substantially emptied of yarn, it is ejected from the system. The system can concurrently

handle various types of bobbins and sort and deliver the bobbins to winding stations designated for handling a particular type of bobbin.

3,774,860

APPARATUS FOR EVALUATING THE WINDING SPEED OF CROSS-WINDERS

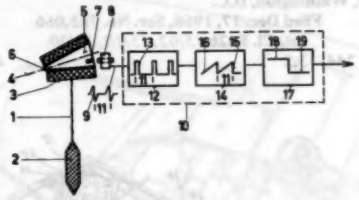
Erich Loepfe, Zollikerberg, Switzerland, assignor to Aktiengesellschaft Gebruder Laepfe, Wetzikon, Switzerland

Filed May 17, 1971, Ser. No. 143,776

Claims priority, application Switzerland, May 28, 1970, 8012/70

Int. Cl. B65h *63/00*, *63/06*; D01h *13/22*

U.S. Cl. 242—36 4 Claims



An apparatus for evaluating the winding speed of cross-winding machines which comprises electro-magnetic pulse generator means cooperating with a winding unit of the cross-winding machine, and an electronic pulse space-evaluation circuit arrangement operatively coupled with such pulse generator means, the pulses generated by said pulse generator means being transmitted to said electronic pulse space-evaluation circuit arrangement. The pulse space-evaluation circuit arrangement contains a circuit for generating sawtooth voltages, the amplitude of which is proportional to the spacing in time of each two successive pulses, and a bistable circuit which flips as soon as the sawtooth voltage has reached a predetermined amplitude value.

3,774,861

SPRING CLUTCH MECHANISM F TAPE CARTRIDGE

Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 21, 1971, Ser. No. 155,015

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A 4 Claims

A tape cartridge for use in tape players having an internal tape spool assembly within a housing enclosure including an endless tape wound on a freely rotatable generally circular tape spool. The tape cartridge contains an elongated blade-like spring member mounted therein and having a free end portion engaging the spool assembly so as to comprise a one-way spring clutch mechanism whereby rotation of the tape spool in a first direction is permitted because of movement of the engaging free end portion away from engagement with the spool assembly, but rotation in the opposite direction is prevented because of the continuously tightening movement of the free end portion of the spring member against the spool assembly.

3,774,862

REEL FOR COLLING STRIP

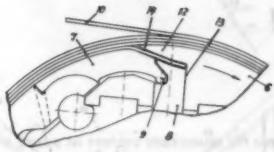
Alexander Rodach, Pforzheim, Germany, assignor to Frau Irma Ungerer, Pforzheim, Germany

Filed May 8, 1972, Ser. No. 251,177

Claims priority, application Germany, May 27, 1971, P 21 26 405.1

Int. Cl. B21c *47/06*; B65h *75/28*

U.S. Cl. 242—78.3 7 Claims



The reel comprises a plurality of expansible shell portions, expanding bars operable to expand said shell portions, a radially movable clamping bar for clamping a strip end portion, and a pivotally movable transition member, which is coupled to said clamping bar by interengaging therewith and adapted to guide a strip portion adjacent to said clamped strip end portion.

3,774,863

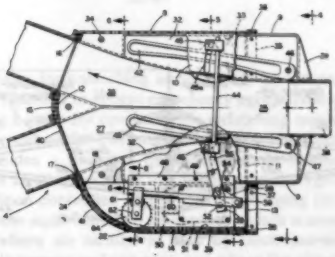
PNEUMATIC TUBE SYSTEM Y-TUBE DIVERTER CONSTRUCTION

Pieter J. Ekama, Malvern, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Division of Ser. No. 115,181, Feb. 16, 1971, Pat. No. 3,701,496. This application June 12, 1972, Ser. No. 261,928The portion of the term of this patent subsequent to Oct. 31, 1989, has been disclaimed.

Int. Cl. B65g *51/24*, *51/04*

U.S. Cl. 243—29 6 Claims



A Y-tube diverter construction for multiple station pneumatic tube systems. A Y-tube section having a main and two branch legs is mounted within an airtight housing and is provided with a pair of slots throughout the tube section main and branch legs formed by recesses provided in the Y-tube main and branch leg walls. A pair of guide members alternately ex-

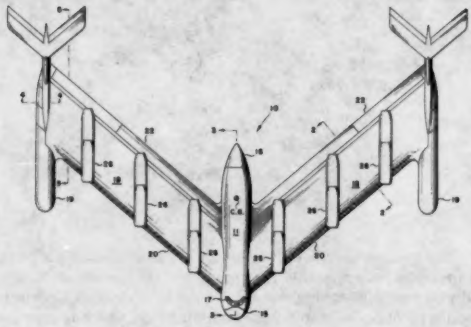
tend through the slots and provide connecting portions between the main leg and one of the branch legs. A slide plate alternately diverts the air flow between the main leg and a selected branch leg, which, in cooperation with the guide members, enables a carrier to travel in either direction through the main diverter leg and a selected branch leg.

3,774,864

CARGO AIRCRAFT HAVING INCREASED PAYLOAD CAPACITY VERSUS WEIGHT

Charles H. Hurkamp, Hilton Head Island, S.C., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed July 19, 1971, Ser. No. 163,813
Int. Cl. B64c *1/00, 3/02*
U.S. Cl. 244—13 **16 Claims**



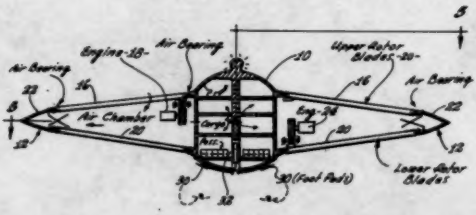
An aircraft configuration provides for structural arrangement whereby large cargo aircraft with appreciably increased pay-load capacity for a given airframe weight is possible. This configuration lends itself to the incorporation of optimum lift, thrust and landing systems. The total result is a large cargo aircraft capable of competing costwise with surface transportation modes.

3,774,865

FLYING SAUCER

Olympio F. Pinto, Rua Visconde de Ouro Preto, 63, Rio De Janeiro, Brazil

Continuation-in-part of Ser. No. 40,596, May 26, 1970, abandoned. This application Jan. 3, 1972, Ser. No. 214,653
Int. Cl. B64c *29/00*
U.S. Cl. 244—23 C **5 Claims**



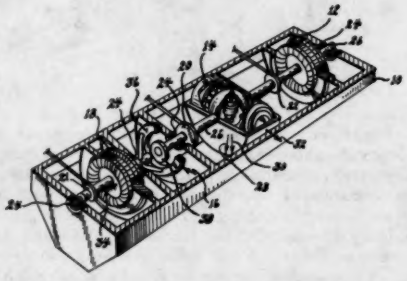
A flying saucer type of aircraft or water vehicle is provided, which may take the form of a toy, or of an actual full-sized passenger and cargo carrying vehicle. The vehicle of the invention includes a cicular-shaped body comprising an outer rim portion and an inner hub portion, and upper and lower groups of rotor helicopter-like blades, each formed into a disc-shaped configuration, and rotatable about the central vertical axis of the hub in the annular space between the hub and rim. The helicopter blades are mounted on fluid bearings in the body, and are rotatably driven by turbine action. The two groups of helicopter blades define a pressurized chamber therebetween. Exhaust ports are provided on the rim which may be selectively opened to control the attitude of the vehicle, as well as to maneuver and control the direction of movement of the vehicle, once it is airborne. The pitch of the rotor helicopter blades is controllable, so that the pressurized fluid in the aforesaid chamber may be directed through the top or bottom of the assembly to control the lift or descent of the vehicle.

3,774,866

DIFFERENTIAL VELOCITY METER

Gilbert F. Madden, Redlands, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 17, 1968, Ser. No. 785,066
Int. Cl. F42b *15/02, 15/10, 15/00*
U.S. Cl. 244—3.2 **4 Claims**



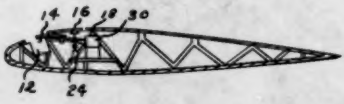
An inertial guidance system for measuring the difference between programmed and actual velocity change in a missile including a sensor for converting a velocity change to a shaft angle located between the sensor case and a pendulous gyro mounted on an internal turntable and means for converting the analog angle indication to digital read out data.

3,774,867

ACOUSTIC WING STALL DELAYING DEVICE

Brian P. Quinn, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 27, 1972, Ser. No. 266,787
Int. Cl. B64c *21/02*
U.S. Cl. 244—40 R **3 Claims**



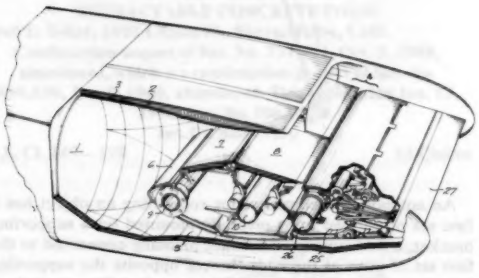
An apparatus for delaying the onset of wing stall in an aircraft having a plurality of acoustic resonators positioned in the forward portion of the upper surface of the wing with a movable panel to close the resonator cavities during normal flight.

The movable panels partially expose the resonator cavities to provide orifices which generate the desired acoustic signal of approximately the same frequency as in the flow field.

3,774,868
INTEGRATED NOZZLE

Gerald F. Goetz, 3235 South 152nd St., Seattle, Wash.

Continuation of Ser. No. 68,343, Aug. 8, 1970, abandoned.
This application Dec. 11, 1972, Ser. No. 315,755
Int. Cl. B64d *33/04;* **B63h** *11/10;* **B64c** *15/00*
U.S. Cl. 244—53 R **6 Claims**



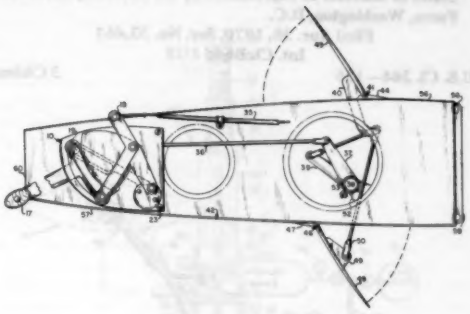
An aircraft engine exhaust nozzle system having thrust vectoring capability for use in flight path management, for in-flight thrust reversal or modulation, or for thrust reversal during landing; and which includes a variable area nozzle for improved propulsion efficiency. The preferred embodiment utilizes an exhaust passageway having a rectangular nozzle exit area for minimum base area, boattail, and interference drag. An aerodynamically shaped plug is centrally located in the path of the exhaust gases. The portion of the plug extending aft of the nozzle exit plane is used as a thrust vector control means and comprises a pair of oppositely facing surfaces which can be displaced for changing the flow pattern of the exhaust gases, thereby generating a thrust vector for use as a primary flight control in rotating the aircraft about one of its major axes. The oppositely facing surfaces can also be positioned for forward thrust modulation or for full reversal of the thrust vector. A portion of the plug extending forward of the exit plane provides for variable throat area control by displacement of plug surface panels to obtain a desired nozzle throat area and, independently, a passageway shape and exit area for improved propulsion efficiency.

3,774,869
COMBINED THROTTLE SPOILER ACTUATOR FOR AIRCRAFT

Kenneth N. Harmon, P.O. Box 1201, Kerrville, Tex.

Filed Mar. 7, 1972, Ser. No. 232,388
Int. Cl. B64c *13/04*
U.S. Cl. 244—83 R **10 Claims**

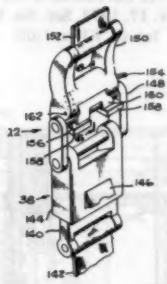
A mechanical multiple linkage cam controlled manually powered handle and arm activated mechanism for progressively retarding the throttle to neutral deploying simultaneously a spoiler and dive brake in a progressive action to reduce the lift of the airfoil thereby increasing the rate of descent without substantially increasing the air speed. After landing, a further movement of the control arm to the rear advances the throttle. At any stage of progressive movement of the combined linkage, the rapid advance of the arm and throttle arm forward to the full power position simultaneously retracts the spoiler and dive brake to restore maximum lift simultaneously with the application of maximum power.



3,774,870
EMERGENCY ACTIVATING APPARATUS

Harold B. Sheffield, Novato, and Abraham M. Reiter, Northridge, both of Calif., assignors to Gulf & Western Industries, Inc., New York, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,029
Int. Cl. B64d *25/06*
U.S. Cl. 244—122 B **7 Claims**



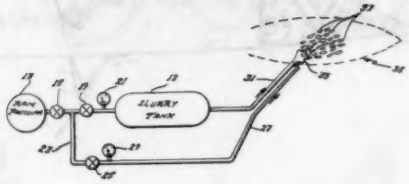
Apparatus for unlatching airmen from equipment to which they are fastened to permit emergency egress from an aircraft, including a squib for operating the unlatching mechanism and a reliable circuit for energizing the squib. The energizing circuit includes a portable battery which is connected to a capacitor at all times prior to and after the emergency egress, and a silicon controlled rectifier for discharging the capacitor through the squib when an emergency switch is closed. In one system where an airman is held by latch assemblies to a parachute canopy and to a seat, and where the airman routinely operates manual latches every time he enters and leaves the aircraft, a squib-operated latch is placed in series with each manual latch so that operation of either latch of a series separates the man from the one location on the parachute or seat. The manual latches are of a type which is of proven reliability and familiar manner of operation, and the squib-operated latches are placed between the manual latches and the equipment from which the airman must be separated.

3,774,871

EXTERNAL SLURRY INJECTION FOR INFRARED ENHANCEMENT OF EXHAUST PLUME

Ignatius W. Semmes, Fort Walton Beach, and Charles B. Simpson, Mary Esther, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 30, 1970, Ser. No. 33,461
Int. Cl. B64d 1/18
U.S. Cl. 244—136 3 Claims



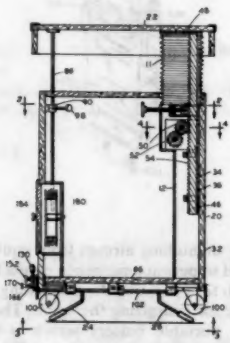
A means for enhancing the infrared content of the exhaust plume of a rocket-powered target vehicle by controllably atomizing and injecting an enriching slurry into the main exhaust flow thereby producing an output which realistically simulates the radiant intensity pattern produced by an afterburning aircraft.

3,774,872

PROJECTOR TABLE CABINET

Benjamin J. Morelli, 411 Larchmont Ave., Utica, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,032
Int. Cl. F16m 1/00
U.S. Cl. 248—11 4 Claims



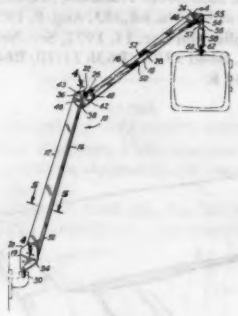
Projector cabinet stand having a manual rack and pinion elevatable projector platform above the base, with a rack lock and resilient weight balancing extensible columns extending from the underside of the platform to the bottom of the cabinet, support rods are provided for the platform having rod guides affixed to an inside wall of the cabinet, with locking means for the rods, the cabinet also having casters, and retractable legs pivotally mounted upon the underside of the cabinet.

3,774,873

EQUIPOISED ARM ASSEMBLY

Jens Kregsrud, Oslo, Norway, assignor to JAC. Jacobsen A/S, Oslo, Norway

Filed Nov. 24, 1971, Ser. No. 201,711
Int. Cl. A47f 5/00; A47g 29/02
U.S. Cl. 248—280 10 Claims



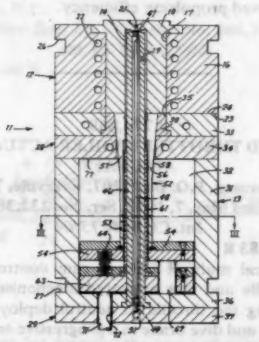
An equipoised mechanism for supporting an object has a first set of parallel arms pivotally mounted on a supporting bracket, a first supported bracket pivotally connected to the first set of arms at the ends thereof opposite the supporting bracket, a second set of parallel arms pivotally mounted on the first supported bracket, and a second supported bracket pivotally mounted at the ends of the second set of parallel arms, opposite the first supported bracket, to which a mounting assembly and supported object are attached. The arms and brackets define two parallelograms by which the first and second supported brackets are maintained in a predetermined orientation with respect to the supporting bracket; balance and equalization forces on the mechanism are provided by a pair of springs operably connecting the first set of parallel arms and two sets of parallel springs operably connecting the second set of parallel arms.

3,774,874

MOLD DESIGN INCORPORATING A COLLET

Paul P. Clark, Sturgis, Mich., assignor to Sturgis Molded Products Company, Sturgis, Mich.

Filed Apr. 19, 1971, Ser. No. 135,346
Int. Cl. B29f 1/14
U.S. Cl. 249—59 13 Claims



An improved mold construction having coacting separable mold parts for permitting formation of a cup-shaped molded

product. One of the mold parts is provided with a core pin which coacts with the other mold part to define a cup-shaped mold cavity therebetween. The one mold part also has a resilient collet movably mounted thereon in surrounding relationship to the core pin. The collet, which defines a part of mold cavity, has a radial irregularity, such as a helical groove, formed in the jaws thereof for permitting formation of a desired radial irregularity on the molded product. The mold construction includes an ejection mechanism which is movable longitudinally of the core pin for ejecting the molded product. The ejection mechanism also causes limited movement of the collet to enable the jaws thereof to move resiliently radially and disengage the radial irregularity formed on the molded product prior to complete ejection of the molded product.

3,774,875

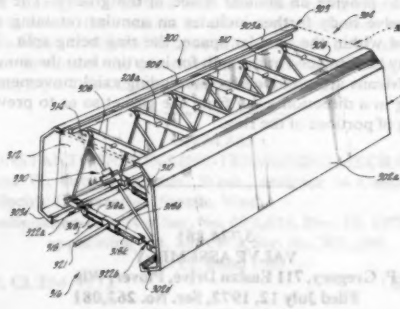
RETRACTABLE CONCRETE FORM

Fred L. Ecker, 1905 Liliano Pl., Sierra Madre, Calif.

Continuation-in-part of Ser. No. 777,941, Oct. 3, 1968, abandoned, which is a continuation-in-part of Ser. No. 696,536, Jan. 9, 1968, abandoned. This application Jan. 13, 1971, Ser. No. 106,035

Int. Cl. B28b 7/30

U.S. Cl. 249—178 **13 Claims**



A retractable form for casting material, such as concrete, thereabout, has an elongate, substantially unitary structure including a pair of oppositely facing side legs connected together by an upper portion with the legs being movable relative to each other. The structure further includes first means coupled between the legs for setting them in a first position when the first means is in a first state, and for moving them out of the first position and toward each other, thereby retracting the form, when the first means is moved into a second state so that the form may be disengaged from material cast thereabout. The structure also includes second means coupled between the legs and cooperating with the first means for preventing movement of the legs relative to the upper portion when the first means is in the first state, the second means permitting movement of the legs out of the first position and toward each other when the first means is moved from the first state into the second state.

3,774,876

PIPE PINCHING MACHINE

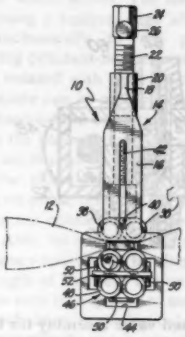
Ted R. Melsheimer, 13668 E. Park St., Whittier, Calif.

Filed Feb. 18, 1972, Ser. No. 227,418

Int. Cl. F16k 7/06

U.S. Cl. 251—8 **10 Claims**

A machine or tool for pinching so-called "polymer" or "plastic" pipe so that the interior of such pipe is closed can be constructed using a pair of opposed, parallel jaws mounted so that they may be moved relative to one another in order to bring them towards a pipe located between them. Each of the jaws has side edges which are shaped as curved surfaces; such surfaces on each of the jaws are spaced from one another. As the machine is operated the curved surfaces of each of the



jaws engage different regions along the length of a pipe positioned between them so that the curved surfaces on each of the jaws act as separate jaws engaging and deforming different portions of the pipe.

3,774,877

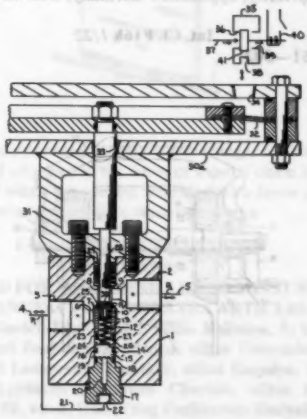
VALVE

Walter W. Robertson, P.O. Box 86, Girard, Pa.

Filed Aug. 8, 1972, Ser. No. 278,873

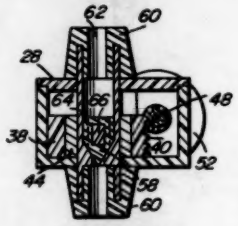
Int. Cl. F16k 1/32

U.S. Cl. 251—30 **6 Claims**



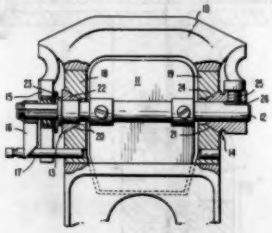
A two way valve for controlling flow between pressures (P1) and (P2) which is biased closed by a spring overcoming the weight of the moving valve operating member and also by pressures (P1) and (P2) so the valve is fail-safe whether (P1) is less than, equal to, or greater than (P2). This is accomplished by dividing the moving valve operating member into two parts acting cumulatively or in series with one part biased closed by (P1) and open by (P2) and with the other part biased closed by (P2).

3,774,878
VALVE ASSEMBLY
Sylvia Martinez, 1111 Pizarro St., Coral Gables, Fla.
Filed Nov. 8, 1971, Ser. No. 196,354
Int. Cl. F16k *31/08*
U.S. Cl. 251—65 **9 Claims**



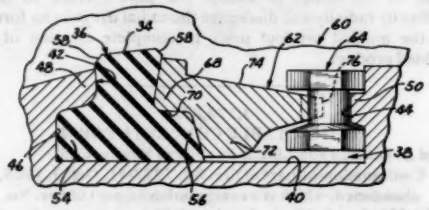
A magnetically operated valve assembly for laboratory use and the like, said assembly comprising a housing with fluid connectors extending therefrom, a valve member with a permanent magnet affixed thereto for movement between a plurality of positions, and an adjustment knob operatively connected to a magnetic actuator for selectively positioning the valve member at a desired setting to control the rate of fluid flow and droplet size.

3,774,879
BEARING SUPPORT FOR HEATER VALVE SHAFT IN INTERNAL COMBUSTION ENGINES
Anton Zink, Fellbach, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Dec. 20, 1971, Ser. No. 210,022
Claims priority, application Germany, Dec. 23, 1970, P 20 63 369.6
Int. Cl. F16k *1/22*
U.S. Cl. 251—303 **18 Claims**



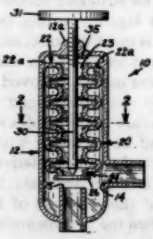
A bearing support for a heater-valve shaft in internal combustion engines, in which a shaft with a valve mounted thereon is arranged in an exhaust elbow or at a corresponding place, for example, in a distributor housing, which controls the inlet of the hot exhaust gases for the preheating of the suction air and/or the carburetor; the shaft is supported by means of two symmetrically arranged conical members in corresponding conical bearing portions of the exhaust elbow or of the corresponding distributor housing and at least one of the conical bearing supports is adjustable.

3,774,880
BUTTERFLY VALVE BODY
Carter C. Crookham, and Robert C. Billings, both of Oskaloosa, Iowa, assignors to Clow Corporation, Oak Brook, Ill.
Filed Feb. 11, 1972, Ser. No. 225,530
Int. Cl. F16r *1/228*
U.S. Cl. 251—307 **20 Claims**



A butterfly valve body comprising an annular gasket defining a valve disc seat which is disposed in an annular groove. The gasket is formed of a resilient material and is proportioned to provide an annular space in the groove. The butterfly valve body further includes an annular retaining ring disposed within the annular space, the ring being split. The ring may be displaced at the split for insertion into the annular space. Means are provided for precluding axial movement of the ring in a direction away from the gasket so as to prevent rocking of portions of the ring.

3,774,881
VALVE ASSEMBLY
Jerome P. Gregory, 711 Easlan Drive, Plover, Wis.
Filed July 12, 1972, Ser. No. 262,081
Int. Cl. F16k *41/04*
U.S. Cl. 251—335 **7 Claims**



A valve assembly of an expandable bellows type construction in which the bellows are constructed entirely from glass. A rotatable shaft extends axially within the glass bellows to engage a closed end thereof for urging the closed end, upon rotation of the shaft, against an outlet or valve seat in a gas flow conduit. Utilization of a plurality of such glass valves in a manifold assembly is also disclosed.

3,774,882

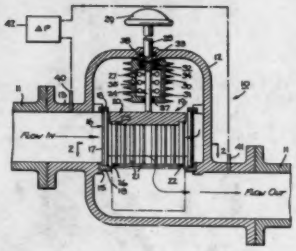
PROCESS FLOW METER

Joseph O'Connor, Jr., Goshen, N.Y., assignor to Kieley & Mueller, Inc., Middletown, N.Y.

Division of Ser. No. 112,890, Feb. 5, 1971, Pat. No. 3,709,245. This application Sept. 25, 1972, Ser. No. 291,928

Int. Cl. G01f *1/00, 1/06*

U.S. Cl. 251—369 5 Claims



The process flow meter has a stator which imparts a swirl to the flow of fluid and a rotor which is rotated under the swirl of fluid. Energy is absorbed from the rotor in various ways. In one instance, the rotation of the rotor is subjected to a drag force which is induced in opposition to the force of rotation in order to control the pressure drop in the flow. In addition, a means is provided to measure the flow of fluid.

3,774,883

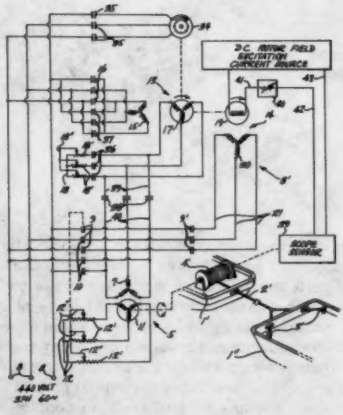
CONSTANT TENSION LINE-TENSIONING MECHANISM

Cyrus W. Ostrom, Seattle, Wash., assignor to Consolidated Electric Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 099,575, Dec. 18, 1970. This application Oct. 26, 1972, Ser. No. 301,208

Int. Cl. B66d *1/48*

U.S. Cl. 254—172 6 Claims



Constant line tension can be maintained in a ship's mooring or towing line extending from a winch by supplying to a polyphase phase-wound induction motor driving the winch alternating current from an alternating-current source the frequency of which is variable in response to the load on the winch. Such variable-frequency source may be an alternator driven by a phase-wound induction machine powered to operate as a motor. The variable-frequency AC source is connected to the winch motor to drive the winch only in the reeling-in direction, but the tension on the line can retard the motor speed or stall the motor or rotate the winch and motor in the opposite, paying-out direction against the reeling-in torque of the motor. The winch motor torque can be adjusted by varying the value of resistance shunted across the rotor winding of the winch motor. The line can be retrieved very quickly by having a squirrel-cage alternating-current motor connected mechanically to the phase-wound induction machine. During constant-line-tension operation, such motor is simply idly rotated with such machine, but for rapid line retrieval the motor can be powered by the same AC supply as powers the phase-wound induction machine and such motor will then drive the phase-wound induction machine positively to operate as an alternator. During such operation the field windings of the phase-wound electrical machine are connected in reverse phase relationship to the AC supply and the rotor windings are connected to the stator windings of the winch motor. Also, for towing applications the voltage of the variable-frequency source can be altered in response to variations in the length of line paid out or reeled in to control the winch motor in turn in response to sensing the extent of rotation of the winch drum in paying out or reeling in the towing line and correspondingly varying the field excitation of the alternating-current generator supplying current to the winch motor to operate the winch motor for restoring the line to its original length.

3,774,884

PLAQUE

Barnet Singer, 5454 South Shore Drive, Chicago, Ill.

Filed Sept. 15, 1971, Ser. No. 180,557

Int. Cl. E04h *17/14*

U.S. Cl. 256—32 4 Claims

A device comprising among other things, a plaque to be mounted and attached to the wires of a metal chain link fence, an expanded metal wire fence, a welded wire fence or the like in order to cover one or more mesh openings.

3,774,885

METHOD FOR PREPARING LIQUID MIXTURES IN MANUFACTURE OF LATEX ARTICLES

Dmitry Danilovich Logvinenko, ulitsa Kalinina, 5, kv. 5, Poltava; Alexei Dmitrievich Chugai, ulitsa Gvardeiskaya, 21, Kiev; Karl Lazarevich Tsantker, ulitsa Gogolya, 19, kv. 4, Poltava; Ljudmila Efimovna Chechik, ulitsa Krasnoarmeiskaya, 58, kv. 2, Kiev; Oleg Parfirovich Shelyakov, ulitsa Kalinina, 5, kv. 100, Poltava; Mikhailovna Belonozhko, ulitsa Frunze, 108, kv. 4, Poltava; Ekaterina Alexandrovna Morozko, ulitsa K.Libknekhta, 22, Poltava, and Ljudmila Nikolaevna Kuzmina, ulitsa Ahmaznaya, 4, kv. 191, Poltava, all of U.S.S.R.

Filed Nov. 9, 1971, Ser. No. 197,103

Claims priority, application U.S.S.R., May 17, 1971, 1652664

Int. Cl. C08c *1/18*; B01f *13/08*

U.S. Cl. 259—1 R 2 Claims

A method for preparing liquid mixtures in the manufacture of latex goods in which the components entering the mixture

are brought together and then mixed with the aid of ferromagnetic objects acted upon by a rotating electromagnetic field with subsequent separation of the said ferromagnetic objects from the obtained mixture by any of the known methods.

3,774,886

DEVICE FOR MIXING AND CASTING

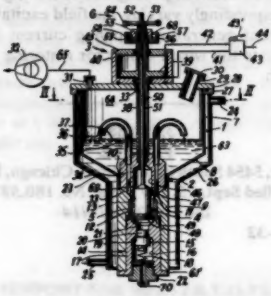
Erhard Hauser, Schwalbach, Germany, assignor to Arthur Vakuumtechnik Pfeiffer GmbH, Wetzlar, Germany

Filed Apr. 17, 1972, Ser. No. 244,799

Claims priority, application Germany, Apr. 17, 1971, P 21 18 744.0

Int. Cl. B01f 15/02

U.S. Cl. 259—4 **18 Claims**



A device for mixing and dispensing a mass of castable material includes a mixing container having a dispensing section formed at the bottom thereof. A mixing member is mounted within the container to be actuated vertically relative thereto to effect mixing of the castable mass and vacuum means are provided for drawing off gases accumulated within the container during mixing. A closure member including a piston is mounted upon the mixing member to be movable relative thereto. The closure member sealingly engages dispensing section of the container to prevent outflow of material during mixing and is disengageable therefrom to enable dispensing of the mixed castable mass.

3,774,887

APPARATUS FOR MIXING COREACTIVE LIQUIDS WHICH FORMS POLYURETHANES

Donald Dunn, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

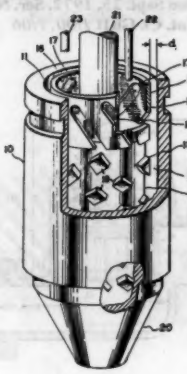
Division of Ser. No. 878,081, Nov. 19, 1969, Pat. No. 3,674,720. This application Jan. 27, 1972, Ser. No. 221,175

Int. Cl. B01f 7/16

U.S. Cl. 259—8 **4 Claims**

A process and apparatus for intimately mixing two or more mutually coreactive liquids such as polyols and polyisocyanates comprising:

A. passing the liquids, while in a substantially unmixed state, through a plurality of very small holes such as that provided by a screen, and immediately thereafter



B. subjecting the liquids to a high shear.

The present process and apparatus find particular utility in the production of high density, foamed polyurethane moldings.

3,774,888

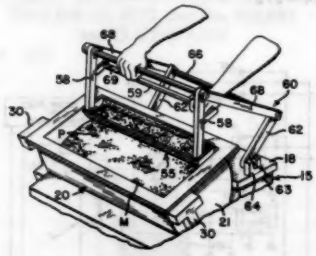
VIBRATORY APPARATUS

Max Isaacson, Dayton, Ohio, assignor to Vibrodyne, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 73,810, Sept. 21, 1970, abandoned. This application May 28, 1971, Ser. No. 148,023

Int. Cl. B01f 11/00

U.S. Cl. 259—72 **16 Claims**



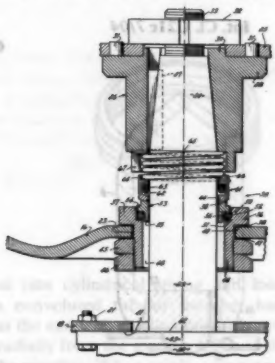
An elongated open top container is supported by springs and is vibrated by a power source to effect orbital movement of a load of parts and media in a generally circular path within the container. An elongated scoop-like screen member is supported by either a pivotable lever mechanism or a motor driven shaft for movement between a collecting position depending into the orbital path of the load in the container and a retracted elevated position above the orbital path of the load. The screen member may be positioned in contact with the container to vibrate the screen member or may be provided with a vibrating element supported by the screen member or by a high jet stream of water to effect separation of a batch of the media from the parts and gravity return of the media to the container. The screen member may also be moved to a laterally outboard position to provide for discharging of the treated parts into a receiving bin, or be supported by a portable frame independent of the frame supporting the vibratory container.

3,774,889

MIXER SEAL

Gabriel Guary, 23, rue du Conseiller Collignon, Paris, France

Filed July 12, 1972, Ser. No. 271,074
Int. Cl. F16j *15/28, 15/30*
U.S. Cl. 259—108 5 Claims



A mixer is disclosed of the type including a vessel and a motor shaft extending upwardly through a bottom wall of the vessel and carrying an agitator at its upper end. A seal is provided between the shaft and bottom wall. The motor is mounted on a plate beneath the vessel and the interior surface of the bottom wall of the vessel is machined parallel to the plate. The seal includes a sleeve which surrounds the shaft and is supported upon the machined surface. The sleeve carries a stationary sealing member having a flat surface parallel to the machined surface and perpendicular to the shaft. A second sealing member rotates with the shaft and includes a flat face spring-urged into engagement with the face of the stationary member.

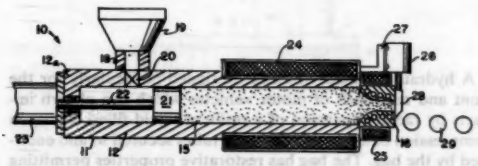
A method is disclosed for establishing the perpendicular relationship of the sealing surfaces and shaft axis. The method includes the step of grinding the inner surface of the bottom wall parallel to the motor mounting plate by means of a grinding wheel driven by a motor mounted on the plate.

3,774,890

APPARATUS FOR WORKING MOLDABLE MATERIAL

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 623,167, Feb. 11, 1967, Pat. No. 3,491,415, which is a continuation-in-part of Ser. No. 142,405, Oct. 2, 1961, Pat. No. 3,422,648, Continuation-in-part of Ser. No. 93,779, Nov. 30, 1970, and a continuation-in-part of Ser. No. 668,561, June 27, 1957, abandoned. This application Apr. 9, 1971, Ser. No. 132,670
Int. Cl. B29b *1/10*
U.S. Cl. 259—185 13 Claims



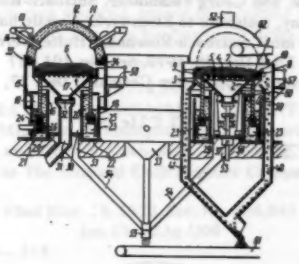
An apparatus and method for processing and forming material to shape by molding. The material is rendered molten in a chamber and, while disposed therein, forces are applied to the material to densify, degasify and improve its internal structural characteristics by predetermining the shape of the crystalline or spherulite micro-structure. In one form, shock waves of predetermined frequency and intensity are applied to the molten material prior to and during its solidification in a die or mold. In another form, the material is intermittently advanced by a series of compressions applied in such a manner as to densify and predetermine the characteristics thereof when molded to shape.

3,774,891

ANNULAR ROASTING MACHINE FOR LOOSE MATERIALS

Nakhman Zalmanovich Plotkin, ulitsa Rozy Ljuksemburg, 2, kv. 13, Dneprodzerzhinsk Dnepropetrovskoi Oblasti; Yakov Pavlovich Kulikov, ulitsa Voroshilova, 15, kv.6, Dnepropetrovsk; Vladimir Ivanovich Loginov, prospekt Lenina, 59, kv. 14, Dneprodzerzhinsk Dnepropetrovskoi Oblasti; Georgy Emmanuilovich Tsukanov, Ryleeva, 24/7, kv. 26, Moscow; Eduard Ivanovich Shkuta, ulitsa Gogolya, 9, kv. 15; Artem Alexandrovich Statkevich, prospekt K. Marxa 70a, kv. 36, both of Dnepropetrovsk, and Vikenty Ivanovich Ivanaevsky, pereulok Chkalova, 6, kv. 2, Krivoi Rog, all of U.S.S.R.

Filed June 9, 1972, Ser. No. 261,334
Claims priority, application U.S.S.R., June 10, 1971, 1660853
Int. Cl. F27b *17/00*
U.S. Cl. 266—21 4 Claims



A machine comprising a rotating housing in the form of two vertical coaxial cylinders whose bottom parts are disposed in annular spaces between two pairs of stationary cylinders closed from below and rest therein on rollers which form hydraulic seals for sealing lower portions of the cylinders and undergrate spaces. The housing cylinders are connected at the top by radial partitions between which are disposed respective windboxes, a common wind belt being formed under the windboxes between the hydraulic seals.

3,774,892

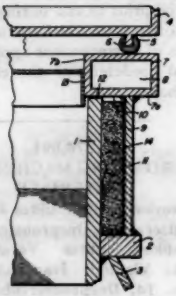
APPARATUS FOR VACUUM DEZINCING LEAD

Georges Althabegoity, Versailles, France, assignor to Societe Miniere et Metallurgique de Penarroya, Paris, France

Filed Feb. 1, 1972, Ser. No. 222,626
Claims priority, application France, Feb. 3, 1971, 7103539
Int. Cl. C22b *13/06*
U.S. Cl. 266—24 7 Claims

A conventional kettle for the vacuum dezincing of lead is conventionally provided with an outer bearing flange for supporting the kettle on a frusto-conical frame. This apparatus is further provided with a ring-shaped space outside the kettle which extends from the top of the kettle to the bearing flange

and which is closed to the ouside of the kettle but open to the inside of the kettle through an annular clearance. This ring-



shaped space reduces the tendency of the kettle to crack between its upper edge and the bearing flange, and thereby increases the useful life of the kettle.

3,774,893

STEEL MAKING CONVERTER

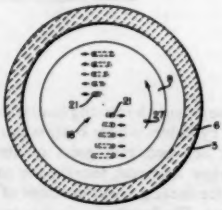
Helmut Knuppel; Karl Brotzmann, both of Sulzbach-Rosenberg Hatte, and Georg Fassbinder, Sulzbach-Rosenberg, all of Germany, assignors to Eisenwerke-Gesellschaft Maximillianshutte mbH, Sulzbach-Rosenberg Hutte, Germany

Filed Dec. 28, 1970, Ser. No. 101,637

Claims priority, application Germany, Dec. 27, 1969, P 19 65 057.8

Int. Cl. C21c 5/48

U.S. Cl. 266—35 **1 Claim**



A bottom-blow converter for use in refining pig iron to make steel comprises a steel jacket with a refractory lining and an inserted bottom containing blowing nozzles. Each of the blowing nozzles is arranged to blow a jet of oxygen surrounded by a sheath of jacket gas into the melt. The nozzles are all circumferentially inclined in the same direction as each other with respect to the longitudinal axis of the converter and they are so arranged that the jets of oxygen and jacket gas which issue from them cause the melt to circulate both about the upright longitudinal axis of the converter and about a horizontal axis normal to this longitudinal axis so that the movement of the melt is the resultant of these two components of movement.

3,774,894

METHOD AND CONVERTER FOR REFINING PIG IRON

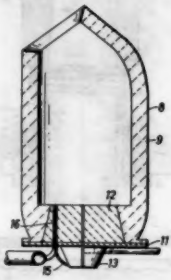
Helmut Knuppel, Richard-Wagner-Strasse 1, Sulzbach-Rosenberg; Karl Brotzmann, Fentschweg 6, Sulzbach-Rosenberg Hutte, and Hans-Georg Fassbinder, Schelmesgraben 20a, Sulzbach-Rosenberg, all of Germany

Division of Ser. No. 821,802, May 5, 1969. This application Jan. 18, 1971, Ser. No. 119,258

Claims priority, application Germany, Feb. 27, 1969, P 19 09 779.1

Int. Cl. C21c 7/04

U.S. Cl. 266—35 **6 Claims**



The invention relates to a method of refining pig iron, particularly with a high phosphorus component, in a bottom blown converter in which oxygen mixed with powdered lime is blown into the melt through the bottom of the converter. According to the invention the jets of oxygen mixed with suspended powdered lime blown into the melt through the bottom of the converter are protected by a surrounding sheath of a jacket gas which is preferably is inert or slow to react with the melt.

3,774,895

HYDRAULIC IMPACT ABSORBER

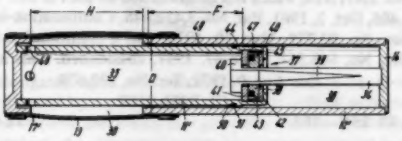
Jean Herbert Willich; Johannes J. DeBaan, and Erich Hahn, all of Ennepetal, Germany, assignors to Firma August Bilstein, Ennepetal-Altenvoerde, Germany

Filed June 20, 1972, Ser. No. 264,503

Claims priority, application Germany, July 14, 1971, P 21 35 000.5

Int. Cl. F15f 7/00

U.S. Cl. 267—136 **26 Claims**



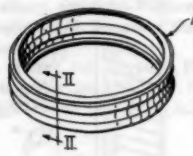
A hydraulic impact absorber designed particularly for the front and rear ends of motor vehicles which can absorb impacts by radial expansion of a resilient liquid-filled bag upon compression of a pair of telescopic tubes secured to and encircled by the bag. The bag has restorative properties permitting repeated use of the impact absorber up to a predetermined impact velocity. Special provision is made for controlled throttling of the damping liquid in its passage within the impact absorber in the event of compression under impact.

3,774,896

DUAL RATE CYLINDRICAL SPRING

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,731
Int. Cl. F16f 1/32, 1/34
U.S. Cl. 267—182 4 Claims



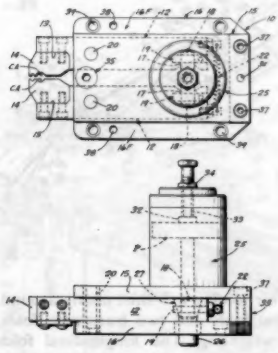
A dual rate cylindrical spring and load arrangement in which a convoluted tubular member has generally radial flanges at the end with axially outwardly protruding shoulders spaced radially from the median plane of the convoluted portion of the member. When axially compressed, the end flanges flex inwardly under elastic conditions until the parts confining the member engage the ends of the axially outermost convolutions. After a first further period of elastic deformation, the member will commence to undergo plastic deformation in the convoluted portion thereof and maintain substantially constant load characteristics.

3,774,897

WORK PIECE FIXTURES

Adolph V. Klancnik, 1020 Glenview Rd., Glenview, Ill.

Filed May 12, 1972, Ser. No. 252,553
Int. Cl. B23q 3/08
U.S. Cl. 269—34 1 Claim



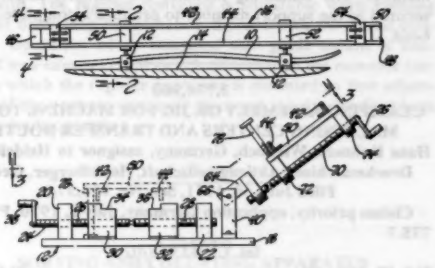
A work piece holding fixture is characterized by a pair of arms presenting work piece holding jaws at one end and rollers at the opposite end, the latter accepting a tapered rod disposed normal thereto for actuating the arms.

3,774,898

APPARATUS FOR RESURFACING SKIS

Eugene J. O'Neil, Detroit, and Arthur J. Ryan, Garden City, both of Mich., assignors to Mod Tops Inc., Detroit, Mich.

Filed Mar. 27, 1972, Ser. No. 238,412
Int. Cl. B25b 1/20, 1/22; B32b 31/12
U.S. Cl. 269—45 8 Claims



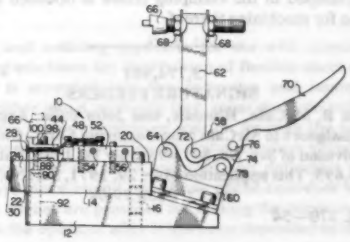
Means for receiving and holding a single ski in a fixed and given position and including a second means for receiving and holding a length of resurfacing material to be applied to the ski for lateral movement from a first position for registry over the ski to a second position in which it is turned over to receive a pressure sensitive contact adhesive, on its back side, and then to be returned to its first position for direct application onto the ski, with special features including an open frame for holding the resurfacing material, means of obtaining registry and special means for locating the binding screw holes.

3,774,899

APPARATUS FOR ASSEMBLING A PRINT HEAD

Joseph L. Mitchner, Wilmington, Ohio; Robert A. Keller, Seminole, and Cylde B. Graham, St. Petersburg, both of Fla., assignors to The National Cash Register Company, Dayton, Ohio

Filed Mar. 20, 1972, Ser. No. 236,041
Int. Cl. B23q 3/00
U.S. Cl. 269—315 3 Claims



A method and jig for assembling a plurality of thermal print wafers to form a print head. The jig includes a fixture plate having accurate first and second planar surfaces perpendicular to each and joined in a common edge. An alignment bar having first and second control surfaces thereon is secured to said plate so that the control surfaces lie in a common plane which is perpendicular to the first planar surface and parallel to the common edge. The print wafers are sandwiched between clamps and positioned on the jig so that the operative ends of the wafers become aligned in a plane controlled by the control surfaces when spring-loaded levers on the jig are used to urge the operative ends against the control surfaces. A com-

pressing lever on the jig is used to compress the wafers between the clamps prior to securing the clamps together to produce a completed print wafer module. The completed print wafer modules are then aligned on a support member while using an alignment fixture having a plurality of control surfaces lying in a common plane. The operative end of each print wafer module is urged into contact with an adjacent pair of control surfaces on the alignment fixture to align the module, and the module is then secured to the support member. The remaining modules are similarly aligned and secured to the support member to produce a completed print head.

3,774,900

CLAMPING ASSEMBLY OR JIG FOR MACHINE TOOLS, MACHINING CENTERS AND TRANSFER ROUTES

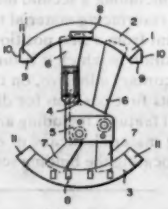
Hans Kuhnert, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberger, Germany

Filed June 30, 1971, Ser. No. 158,374

Claims priority, application Germany, July 2, 1970, P 20 32 775.7

Int. Cl. B23q *3/02*

U.S. Cl. 269—95 **21 Claims**



Clamping assembly for machine tools, machining centers and transfer routes for holding at least one workpiece in machining position includes a clamping frame of given dimensions having means for rigidly connecting the clamping frame to at least one workpiece, and a clamping device for exclusively clamping there-within the clamping frame of given dimensions, the clamping device being secured at a location at which the workpiece is to be machined in a manner that the workpiece clamped in the clamping frame is oriented in a given position for machining thereof.

3,774,901

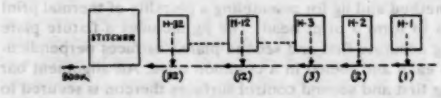
SIGNATURE FEEDERS

William B. McCain, Hinsdale, and John Balla, Argo, both of Ill., assignors to McCain Manufacturing Corp., Chicago, Ill.

Division of Ser. No. 841,493, July 14, 1969, Pat. No. 3,608,893. This application Mar. 29, 1971, Ser. No. 129,252

Int. Cl. B65h *39/04*

U.S. Cl. 270—54 **1 Claim**



Improved operation of a cyclically operable signature gathering machine is achieved by latching the gripper, which feeds a signature from a hopper, against the signature pile in response to a command signal that signatures are not to be fed from the hopper.

3,774,902

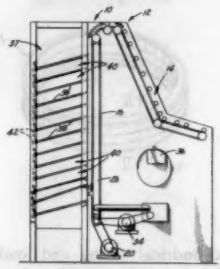
SHEET SEPARATOR WITH INCREASED POCKET OPENING

Erwin F. C. Schulze, Novelty, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Aug. 25, 1971, Ser. No. 174,752

Int. Cl. B65h *39/06*

U.S. Cl. 270—58 **4 Claims**



A sheet distributing mechanism is provided which has pivotally mounted catch trays defining therebetween sheet receiving pockets. Gating means are provided to divert sheets from a conveyer into the pockets. Actuating means are operably associated with the gating means to pivot one of the catch trays defining the aligned pocket to an open position thereby increasing the opening size of the pocket receiving the sheets.

3,774,903

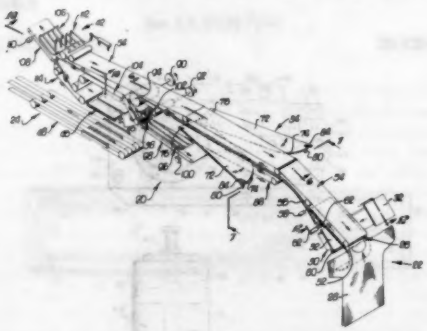
APPARATUS FOR FOLDING T-SHIRTS

Carl F. Sjoman; Clyde R. Wilson; John L. Montoya, all of Hollywood, and Casper L. Bullett, Alhambra, all of Calif., assignors to Team Industries, Los Angeles, Calif.

Filed Sept. 2, 1970, Ser. No. 68,930

Int. Cl. B65h *45/22*

U.S. Cl. 270—66 **4 Claims**



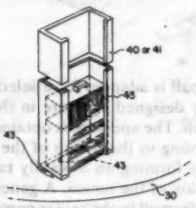
A machine for folding a T-shirt neatly around a card with two longitudinal folds and two transverse folds and with a minimum of wrinkling. The longitudinal folds are made around an elongated form at a longitudinal folding station by laterally moving, longitudinal folding blades while the T-shirt is confined between two conveyors which move at different speeds to compensate for the drag of the longitudinal folding blades. Transverse folding blades at first and second transverse folding stations respectively form first and second transverse folds by inserting appropriate portions of the T-shirt between corresponding closely spaced conveyors. The T-shirt

is confined at all points to prevent slippage and to prevent unfolding of previously formed folds. Pins adapted to penetrate part way through the card serve as a means for delivering the card to the machine.

3,774,904
TICKET READER

Pierre G. Foret, Sudbury, and John William Donohoe, Natick, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 56,281, July 20, 1970, Pat. No. 3,689,065.
This application Mar. 20, 1972, Ser. No. 236,528
Int. Cl. B65h *1/06, 5/18, 5/22*
U.S. Cl. 271—11 **9 Claims**

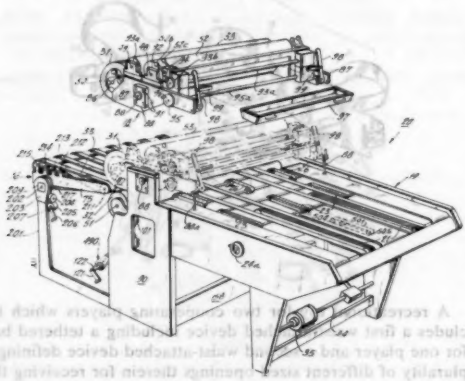


A system for processing tickets which includes a stacker for storing a plurality of tickets one on top of the other within the confines thereof, a carrier having a ticket receiver positionable below the stacker bottom to receive tickets from the stacker when the receiver is positioned below the stacker ottom, and the stacker having a plurality of projections to prevent more than one ticket from leaving the stacker when the receiver is in position to receive a ticket.

3,774,905
SHEET FEEDING APPARATUS FOR COATING MACHINES

Robert Williams, Dover, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,343
Int. Cl. B65h *5/02, 9/00*
U.S. Cl. 271—49 **5 Claims**

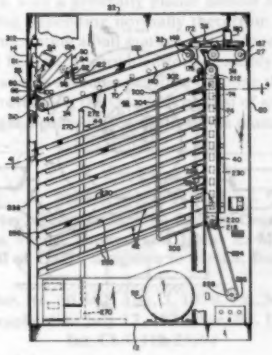


Apparatus for applying a lacquer or similar protective coating to one surface of a metal sheet is constructed with upper and lower sub-assemblies. The upper sub-assembly includes an applicator roll, a lacquer supply means, and metering rollers for applying a controlled layer of lacquer to the applicator roll. The lower sub-assembly includes an impression roll and a clean-up system therefor, with the elements of the clean-up system being readily movable to accessible positions by means of slide and/or pivot connections. A register conveyor, which receives metal sheets from an initial conveyor, delivers these sheets to a suction belt that feeds the metal sheets to the nip between the applicator and impression rolls in timed relation therewith. The register conveyor is adjustable while running without disturbing coordination thereof with the initial conveyor. Operation of air operated side guide means is controlled by a cam operated switch mounted on the movable carrier to which the register conveyor is mounted so that adjustment of the register conveyor does not require readjustment of side guide operation.

3,774,906
SORTING AND COLLATING APPARATUS

Edmund I. Fagan, Bellevue, and Jack D. Keeler, Seattle, both of Wash., assignors to EMF Corporation, Seattle, Wash.

Filed July 28, 1971, Ser. No. 166,905
Int. Cl. B65h *29/60*
U.S. Cl. 271—64 **46 Claims**



Sorting and collating apparatus for use with copying and duplicating machines for distribution of flexible sheet material. Paper is accepted into the apparatus and immediately diverted either into a receiving tray, separated into individual sorting trays in the machine or sent on through the machine into another sorter unit. The apparatus employs vacuum and belt conveying of the sheet material and deflectors for the sorting trays move in and out of one of the conveyor vacuum chambers. Means are provided for making the paper more accessible to the operator after it has been deposited in the sorting trays.

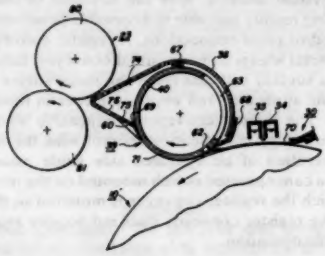
3,774,907
VACUUM SHEET STRIPPING APPARATUS

Stephen Borostyan, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 16, 1971, Ser. No. 180,965
Int. Cl. B65h *29/24*
U.S. Cl. 271—80 **7 Claims**

A vacuum sheet stripping device is herein disclosed suitable

for removing cut sheets of final support material from the surface of an image retaining member, as for example, a xero-



graphic plate, and advancing the separated sheet along a predetermined path of travel.

3,774,908

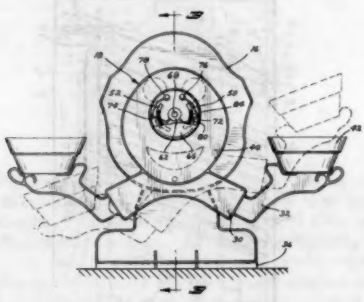
BALANCE TOY

Allen A. Greenberg, Cincinnati, Ohio, assignor to General Mills Fun Group, Inc., Minneapolis, Minn.

Filed May 6, 1971, Ser. No. 140,802

Int. Cl. A63f *9/00*; **G01g** *1/24, 23/18*

U.S. Cl. 273—1 R **6 Claims**



A toy or game device which includes a balance arm pivotable about a horizontal axis. The support base for the balance arm includes a horizontal shaft to which the balance arm is pivoted. A metal bell is secured to and covers the projecting end of the horizontal shaft. A pair of clappers including weights secured to the free ends of a pair of flexible elongated wire springs are attached to the pivot shaft of the balance arm and are positioned within the metal bell with the weights spaced from the inner surface of the bell. A pair of cam members are attached to the balance arm, one on each side of the pivot point. A second pair of cam members are attached to the support member, one on each side of the pivot point, but spaced inwardly toward the pivot point with respect to the first pair of cam members. The wire springs normally extend between a respective support and balance arm cam member, resting against the upper edge of the balance arm cam member. As one side of the balance arm is rotated downwardly the wire spring rides along the inclined surface of the support member cam and is pushed off the end of the balance arm cam. The biase of the wire spring causes it to snap outwardly and thus drive the weight against the bell causing it to ring. Pivotal movement of the balance arm is caused by placing one or more chips or weights on the ends of the arm. The number of chips placed on the arm is determined by a spinner mechanism.

3,774,909

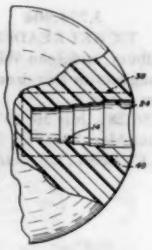
BOWLING BALL

Charles F. Linden, 24488 Lorain Rd., North Olmsted, Ohio

Filed June 3, 1971, Ser. No. 149,588

Int. Cl. A63b *37/00*

U.S. Cl. 273—63 A **4 Claims**



A bowling ball is adapted for a selective bowler by producing a specially designed aperture in the ball for the selective bowler's thumb. The aperture is obtained by boring a recess to a depth according to the length of the thumb of the selective bowler and by forming an inwardly tapered first chamber at the inner portion of the recess. A generally cylindrical second chamber also formed in the recess communicates with the first chamber and terminates at the surface of the bowling ball. The diameter of the second chamber substantially corresponds to the maximum diameter of the selective bowler's thumb. The length of the first chamber is such as to accommodate the end portion of the bowler's thumb.

3,774,910

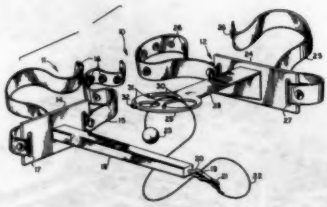
WAIST MOUNTED TARGETS AND TETHERED BALLS

Wilmer David Walker, Jr., 1316 Sharon St., N.W., Atlanta, Ga.

Filed Oct. 26, 1971, Ser. No. 192,063

Int. Cl. A63b *71/02*

U.S. Cl. 273—95 A **4 Claims**



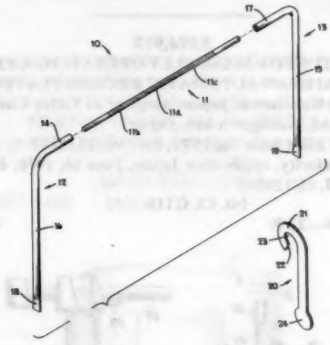
A recreational toy for two cooperating players which includes a first waist-attached device including a tethered ball for one player and a second waist-attached device defining a plurality of different sized openings therein for receiving the ball. The first player manipulates his waist to swing the ball upwardly to the level of the second player's waist, and the second player manipulates his body to catch the ball in one of the openings of his device.

3,774,911

HOOK-SHAPED THROWING MEMBERS AND HORIZONTAL RECEIVING SUPPORT ROD

Donald C. Benfield, 815 Earl St., Middletown, Ind.

Filed Feb. 12, 1973, Ser. No. 331,548
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R 5 Claims



A game system having a plurality of throwing members engageable with a horizontal rod. Each throwing member has a hook-shaped end with an enlarged opposite end and a constant thickness therebetween. A horizontal rod is received into the hollow horizontal end portions of two identical right angle posts. The bottom portion of each post extends vertically and has a lower stake formed end. The horizontal rod includes three scoring areas marked thereon to receive the throwing members.

3,774,912

PEG AND RING APPARATUS INCLUDING INCLINED RAMP LAUNCHING STATION

Marvin I. Glass, and Jeffrey D. Breslow, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 30, 1971, Ser. No. 213,903
Int. Cl. A63b 71/02
U.S. Cl. 273—101 2 Claims

A target game apparatus wherein the object is to propel a ring-like projectile toward a vertical post target for impalement thereon. The projectile is slidingly launched from an upwardly inclined ramp spaced from the target.

3,774,913

COMBINATION GREEN FIXING TOOL AND BALL MARKER

Sam Dien, 156 Rockwood Pl., Englewood, N.J.

Filed Nov. 8, 1971, Ser. No. 196,569
Int. Cl. A63b 57/00
U.S. Cl. 273—162 D 5 Claims

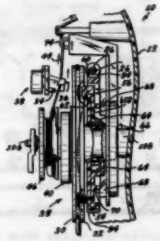
A combination green fixing tool and ball marker in which the tool and marker are detachably secured to one another and releasably received within the grip end of a golf club. The tool is formed with a generally planar handle having a green repairing prong depending normally therefrom. A fastener is provided for mounting a ball marker on one face of the handle and a second fastener is provided for releasably mounting the handle on a radially extending surface defining the axial end of a golf club. Preferably, the fasteners consist of snaps which are co-axially aligned generally centrally of the planar handle.

3,774,914

PHONOGRAPH TOY

Irwin C. Porter, Quinter; Jack L. Barcus, Cerritos; David L. Bear, Palos Verdes Estates, and James E. Marshall, Westminster, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 60,442, Aug. 3, 1970, Pat. No. 3,636,655.
This application July 22, 1971, Ser. No. 165,250
Int. Cl. G11b 25/04
U.S. Cl. 274—1 A 1 Claim

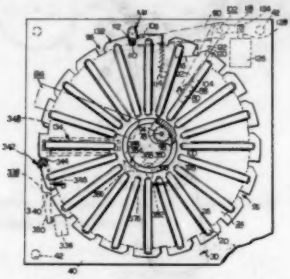


A toy phonograph includes a record with 12 grooves, the grooves having lead-in portions spaced about the periphery of the record. When a cord is pulled to wind a spring motor it positions a stop and the record turns in reverse until it hits the stop, the stop therefore determing which groove will be engaged by the needle when the record is played. The stop can be shifted to choose a different record groove by turning an index wheel.

3,774,915
AUTOMATIC CASSETTE CHANGER

Isao Kozu; Hidetoshi Kurihara, both of Osaka, and Tetsuo Hino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Filed May 6, 1971, Ser. No. 140,761
Claims priority, application Japan, May 6, 1970, 45/38780
Int. Cl. G11b 5/00
U.S. Cl. 274—4 F 4 Claims

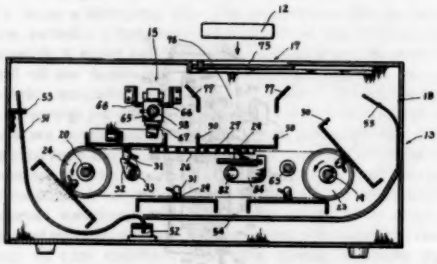


An automatic cassette changer has a rotary tray for storing a plurality of cassettes, a tape deck for playback of the cassettes, and tray driving means for rotating the rotary tray. Index means is provided for restricting the rotation of the rotary tray so as to position a selected single cassette at a first position. Cassette exchanging means transports the single cassette from the first position to an operative position to engage the single cassette with the tape deck. A motor drives the tray driving means and the cassette exchanging means, and clutch means is provided which is responsive to the index means upon restriction of the rotary tray by the index means so as to disengage the motor from the tray driving means and to couple the motor with the cassette exchanging means.

3,774,916
TAPE RECORDER FOR ENDLESS TAPE CARTRIDGES

Hironobu Nanba, Okayama, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan

Filed Oct. 1, 1971, Ser. No. 185,718
Int. Cl. G03b 15/32; G11b 5/00
U.S. Cl. 274—4 F 3 Claims



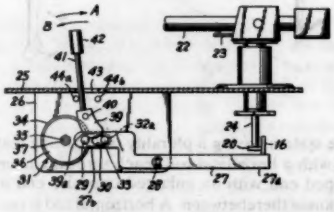
A tape recorder for plurality of endless tape cartridges comprises storing means for storing a plurality of endless tape cartridges, playing means for reproducing the sound of the tape cartridge, carrying means for carrying the cartridge from the storing means to the playing means and from the playing means to the storing means, and control means for controlling the storing means, the playing means and the feeding means electrically and corelatively.

Said storing means is provided with a plurality of cases attached to rotatable endless chain means so as to move with the chain means, each of said cartridges being stored in the appropriate case so as to move along transverse direction aginst advancing direction of the case for feeding the cartridge to the playing means by the aid of carrying means, whereby selection of the desired cartridge from the stored caridges, conveyance and feed of the selected cartidge to the playing means, reproduction and return of the cartridge can be automatically performed.

3,774,917
APPARATUS FOR MANUALLY OPERATING A PICK-UP ARM IN AN AUTOMATIC RECORD PLAYER

Mikio Aso, Kokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa-ken, Japan

Filed June 16, 1971, Ser. No. 153,647
Claims priority, application Japan, June 16, 1970, 45/60174; Dec. 2, 1970, 45/120501
Int. Cl. G11b 3/10
U.S. Cl. 274—23 R 4 Claims

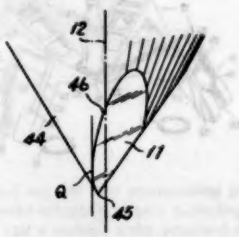


An apparatus for manually operating a pick-up arm in an automatic record player comprises means for automatically elevating a pick-up arm upon completion of playing of a record and means for elevating the pick-up arm by a manual operation when the automatic elevating means is not in operation and the pick-up arm is at its lowered position. The manually operated elevating means elevates and lowers, through an end portion of a lever of the automatic elevating means, or directly, a rod provided for moving the pick-up arm upwardly and downwardly.

3,774,918
PHONOGRAPH PICKUP STYLUS

Norio Shibata, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

Filed Mar. 8, 1972, Ser. No. 232,892
Claims priority, application Japan, Mar. 13, 1971, 46/13537; Oct. 12, 1971, 46/79845; Oct. 12, 1971, 46/79846
Int. Cl. G11b 3/46
U.S. Cl. 274—38 8 Claims



A portion of a conical stylus body is partitioned from the remainder of the structure by one or two planes inclined at a specific angle relative to a centerline axis passing through the

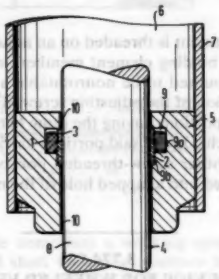
vertex of the conical stylus body. That portion is cut off and removed by one or two cutting steps thereby forming one or two cut faces on the body. An edge line part is formed at the intersection of the one or two cut faces and the outer conical surface of the body. Suitable points on the two lateral sides at the lower part of the edge line part and the parts in the vicinity thereof contact the opposed side walls of the sound groove of a record disc. The curve of the edge line part at the side points and the parts in the vicinity thereof having a large radius of curvature.

3,774,919

SEALED BEARING ARRANGEMENT

Dieter Kreuzer, Schewinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Nov. 15, 1971, Ser. No. 198,751
Claims priority, application Germany, Nov. 20, 1970, P 20 57 027.8
Int. Cl. F16j *15/24*
U.S. Cl. 277—165 **8 Claims**



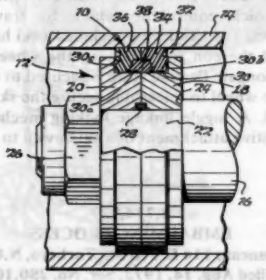
The gap between two movably engaged cylindrical surfaces which connects spaces of different fluid pressure is sealed by an elastomeric ring partly received in an annular recess in one of the surfaces, biased outward of the recess by a resilient pressure ring into engagement with the other surface, and compressed axially by a metal ring movable on the other surface and interposed between the sealing ring and the space of higher fluid pressure.

3,774,920

PISTON RING SYSTEM

Ward Sievenpiper, Milgrove, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed July 12, 1972, Ser. No. 271,204
Int. Cl. F16j *9/08*
U.S. Cl. 277—165 **5 Claims**



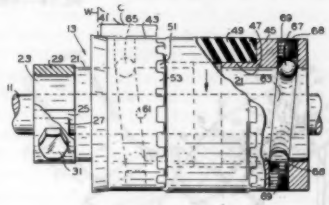
A multiple element seal ring system for fluid actuators comprising first and second resiliently yieldable dynamic sealing elements and a resiliently yieldable static sealing element, the last being of a material having a lower durometer rating than the first two. Each of the three sealing elements consists of an endless annular body for maintaining the seal ring system in a true round condition at all times.

3,774,921

MECHANICAL VARIABLE TORQUE CHUCK

Harry D. Gifford, Washougal, Wash., assignor to Tidland Corporation, Camas, Wash.

Filed Feb. 14, 1972, Ser. No. 225,848
Int. Cl. B23b *31/40*
U.S. Cl. 279—2 **3 Claims**



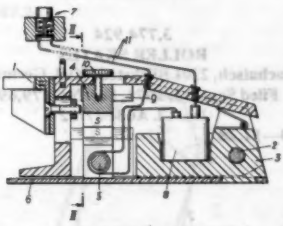
A chuck for a web roll, having a mechanism for translating, proportionally, the web pulling force into a gripping force of the chuck on the roll.

3,774,922

SKI BINDING

Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Gertsch AG, Zug, Switzerland

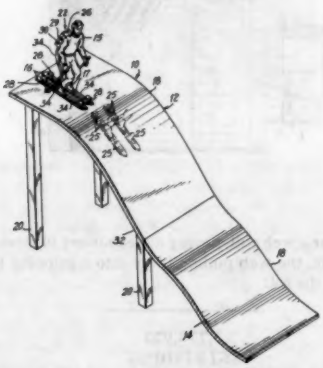
Filed Feb. 7, 1972, Ser. No. 224,137
Claims priority, application Austria, Feb. 18, 1971, A 1393
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 M **9 Claims**



Safety ski binding with magnetic release assisting means. A permanent magnet is fixed to one portion of a releaseable ski binding and an electromagnet is affixed to another portion thereof, which other portion moves away from the first portion during a release operation. Thus so long as the electromagnet is de-energized the permanent magnet operates thereagainst and holds the ski binding closed. However upon energization of the electromagnet, same is energized at such polarity as to repell the poles of the permanent magnet and the ski binding is permitted to open. Energization of the electromagnet may be by the conscious closure of a switch by the

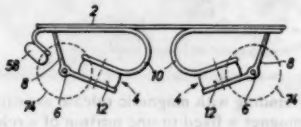
user, by remote control such as radio, or by sensing the bio-electro circuits of the leg muscles of the user when same are subjected to tension to initiate closure of such switch.

3,774,923
ULTRASONIC SKIS OR THE LIKE
Leonard W. Suroff, 12 Tompkins Ave., Jericho, N.Y.
Continuation-in-part of Ser. No. 804,451, March 5, 1969, Pat. No. 3,628,789. This application Dec. 15, 1971, Ser. No. 208,326
Int. Cl. A63c *5/00*
U.S. Cl. 280—11.13 R 32 Claims



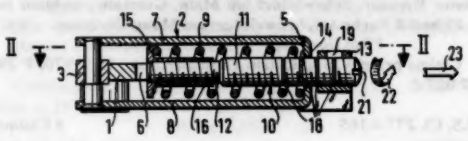
An object supporting system in the form of a ski adapted to transmit ultrasonic mechanical vibrations so as to quantitatively reduce the frictional sliding engagement between the skis of the user and the support surface.

3,774,924
ROLLER SKATES
Adalbert Machatsch, 2301 Blickstedt-Kiel, Germany
Filed Sept. 13, 1971, Ser. No. 179,699
Int. Cl. A63c *17/02*
U.S. Cl. 280—11.28 12 Claims



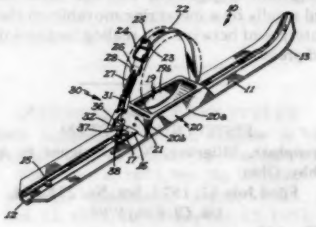
A roller skate with a roller frame for the spring suspension of a roller axle on the sole plate of the skate, in which the roller frame comprises a carrier holding the roller axle and pivotally connected to the sole plate and a U-shaped spring bracket connected to the sole plate and to the carrier.

3,774,925
DEVICE FOR ADJUSTING AND INDICATING THE INITIAL STRESS OF RELEASE-OPPOSING SPRINGS IN SAFETY SKI BINDING ELEMENTS
Roland Jungkind, Farchant, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany
Filed Feb. 9, 1972, Ser. No. 224,834
Claims priority, application Germany, Feb. 16, 1971, P 21 07 376.7
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T 9 Claims



A spring abutment is threaded on an adjusting screw, which is carried by a binding element member, in which the spring abutment is mounted to be nonrotatable and displaceable in the axial direction of the adjusting screw. The adjusting screw comprises two portions having the same handed screw threads of different pitch. One of said portions carries the spring abutment and the other screw-threaded portion of the adjusting screw is threaded into a tapped hole of the member which carries said screw.

3,774,926
SKI DEVICE FOR WHEELED VEHICLES
Raymond L. Chase, 16951 Round Lake Blvd., Anoka, Minn.
Filed Nov. 17, 1971, Ser. No. 199,523
Int. Cl. B62b *19/02*
U.S. Cl. 280—13 2 Claims



A ski device readily attachable to the conventional wheel of a wheeled vehicle equips the vehicle for travel over snow covered terrain. The ski device includes a ski having a wheel-receiving well thereon for receiving the wheel of a vehicle therein. An elongate flexible strap is secured to the ski and extends over the wheel to releasably secure the ski device to the vehicle wheel. A toggle linkage locking mechanism permits quick but positive attachment of a ski device to the wheel of a vehicle.

3,774,927
EMBALMING PROCESS
Stephen M. Duncan, 114 E. Pitt St., Tarboro, N.C.
Filed Aug. 14, 1972, Ser. No. 280,102
Int. Cl. A01n *1/000*
U.S. Cl. 27—22 14 Claims

In abstract, a preferred embodiment of this invention is a process to restore natural color to bodies that are discolored

as a result of death caused by lack of oxygen. This restoration of natural color is accomplished through a process utilizing a heated embalming fluid while cooling the body exterior rather than external, cosmetic methods.

3,774,928

CENTERING SPINDLE FOR TAKING UP TOOL SHAFTS

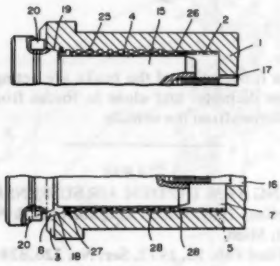
Gerhard Hanak, Bammental; Heinrich Hubert, Neckargemund, and Hans Kuhnert, Wiesloch, all of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 19, 1971, Ser. No. 200,481

Claims priority, application Germany, Nov. 18, 1970, P 20 56 683.0

Int. Cl. B23b *29/00;* **B23q** *3/12*

U.S. Cl. 279—22 **5 Claims**



Centering spindle comprises a working spindle, a takeup bore having a tool shaft receiving aperture in the working spindle, a bearing cage slidably disposed in the bore, the bore being in part comprised of bearing cage supporting wall portions, the wall portions having inside diameters of different magnitudes in respect to the longitudinal axis of the bore, the bore further comprising a short inwardly tapering portion corresponding to a complementary frusto-conical formation on a tool shaft to be inserted thereinto.

3,774,929

SHOPPING CART

Oscar M. Stanley, 370 First Ave., New York, N.Y.

Filed Oct. 6, 1971, Ser. No. 187,024

Int. Cl. B62b *3/02*

U.S. Cl. 280—41 R **3 Claims**

A shopping cart having an auxiliary carrying section is shown. The shopping cart includes a bottom and four walls and has an open and a collapsed, coplanar configuration. The carrying section is removable and collapsible and comprises a bottom, two sides and a front wall. The carrying section provides an auxiliary container for merchandise and is supported on the top of the shopping cart when in use. The walls thereof are connected to one another by easily dismantled connections. The carrying section may be supported on the rear wall of the shopping cart in a collapsed position, when the shopping cart is itself in a collapsed position, so that the entire assembly may be conveniently stored.

3,774,930

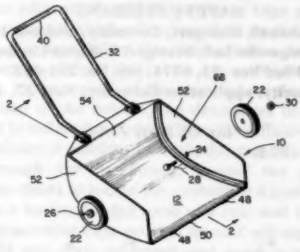
UTILITY DEVICE

Nicholas Pravednekow, Hicksville, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,189

Int. Cl. B62b *1/12*

U.S. Cl. 280—47.24 **8 Claims**



A utility device for moving loads having a load bearing platform including load shifting means in the form of a curved surface built into the top of the platform, in combination with platform fulcrum means for pivoting the surface including the load shifting means, together with fulcrum arm handle means to assist in pivoting the load bearing surface and in shifting the load borne on said surface.

3,774,931

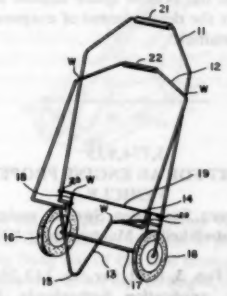
PUSH-CART HAVING METALLIC WIRE FRAME

Jacques Dominique Stelniceanu, Arlington, Va., assignor to The Firm of Dock & Dock, Arlington, Va., a part interest

Filed Dec. 17, 1971, Ser. No. 209,105

Int. Cl. B62b *1/10*

U.S. Cl. 280—47.24 **8 Claims**



This invention relates to a push-cart and carrying device formed of metallic wire and suited for optional travel on wheels or for carrying by means of either of two handles (for selective height of the cart above the ground), and having a removable bag fitted within the frame and held in position on

said frame by strap means. When the bag is in place, small articles may be safely transported in it, and when it is removed, the frame provides an area suited for lodging and transporting a box or case of such size as to be disposed on the base of the frame and within the side arms thereof. A pair of wheels, disposed inwardly from the sides of the frame, provide easy travel of the cart, and braking and support means when the cart is stopped are provided by a portion of the frame which is forwardly and downwardly disposed so that the outermost area thereof rests upon the ground. The lower of two handgrips affixed upon the frame is used when carrying the device, and the upper of said hand-grips rests against the arm, supporting the device in such position as to prevent its impeding the walking of the person carrying it.

3,774,932

SAFETY STEERING

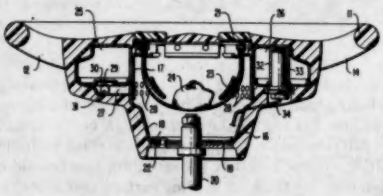
Gerhard Schiesterl, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 23, 1971, Ser. No. 201,408

Claims priority, application Germany, Nov. 27, 1970, P 20 58 411.6

Int. Cl. B60r 21/06

U.S. Cl. 280—87 R **10 Claims**



A safety steering for motor vehicles with a deformation member arranged between the steering wheel and the upper end of the steering spindle which together with the hub frame, the hub bottom and the hub cover forms a hollow space in which an inflatable gas cushion is stored; the inflatable gas cushion is automatically inflated when a predetermined deceleration of the vehicle is exceeded, from two containers storing liquified gas which are arranged at substantially mutually oppositely disposed wall portions of the hub frame; a channel leading to the hollow space adjoins each container and a cartridge for the development of evaporating heat projects into each container.

3,774,933

WHEEL SUPPORT FOR AN ENGINE PROPELLED ROAD VEHICLE

Sture Lennart Asberg, Savedalen, Sweden, assignor to SKF Industriele En Ontwikkeling Maatschapplj NV, Amsterdam, Netherlands

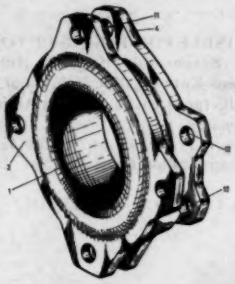
Filed Feb. 3, 1971, Ser. No. 112,285

Claims priority, application Netherlands, Feb. 5, 1970, 7001649

Int. Cl. B62d 7/08

U.S. Cl. 280—96.1 **3 Claims**

A preassembled wheel support unit having inner and outer annular members with confronting raceways for relative rotation and means for connecting one annular member to the vehicle and the other annular member to the wheel and brake disk. The pitch diameter of the raceways is at least twice the overall axial width of the annular members whereby forces



resulting from functioning of the brake are acting at substantially the same diameter and close to forces from the wheel and reaction forces from the vehicle.

3,774,934

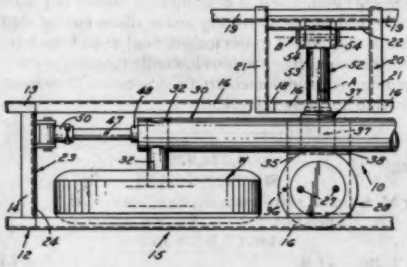
SWING ARM TANDEM AIR SUSPENSION

Donald J. McGee, Troy, Mich., assignor to H & H Equipment Co., Detroit, Mich.

Filed Feb. 16, 1972, Ser. No. 226,828

Int. Cl. B62d 21/02

U.S. Cl. 280—104.5 A **18 Claims**



A low clearance flat bed trailer is sustained adjacent its rear by like air bag-equipped axle suspensions located at either side of the trailer bed. These afford a compounded walking beam and cantilever-type pivotal mounting of front-to-rear tandemed axles to the bed, through the agency of a horizontal, longitudinally extending and medially pivoted tubular rocker arm, and a tubular, transversely extending cantilever arm pivoted at one end to swing about a front-to-rear extending axis. This cantilever member has a substantial moment arm length from its pivot transversely outboard to a connection to a conventional leveling valve-equipped air bag. The walking beam or rocker arm has its medial transverse pivot mount directly above and on the free end of the cantilever arm, through the agency of a bearing on that end; and that bearing carries a horizontal outboard saddle on which the air bag is seated, in turn supporting at its top a bed frame superstructure. The fore and aft wheel axles have rigid connections to the rocker arm, extending transversely outwardly at 90° to the arm adjacent its opposite ends. The cantilever arm has its pivot on a fixed channel-type bracket structure of the trailer frame, to one side of the bed frame superstructure and substantially in the horizontal, low level plane of the bed as a

whole. In addition, a pneumatic shock absorber acts between said superstructure and the longitudinal rocker arm to dampen out relatively high frequency of response of the arm tending to result from resilient air bag action. A type of torque rod unit, end clevis-connected to the rocker arm and trailer bed, operates to laterally restrain the tandem axles.

3,774,935

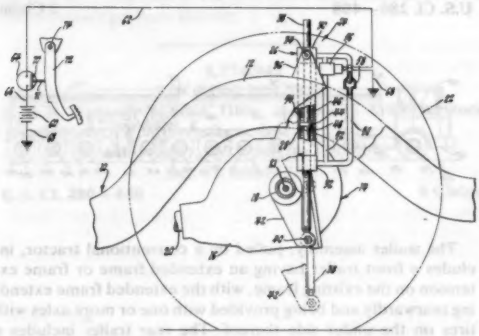
PITCH SUPPRESSING SYSTEM

Fredric C. Aldrich, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 8, 1972, Ser. No. 261,032

Int. Cl. B60g *23/00*

U.S. Cl. 280—124 F **1 Claim**



A system for suppressing forward pitching of the sprung mass portion of a vehicle during braking maneuvers, the system including a cylinder connected to the vehicle sprung mass, a rod connected to the unsprung mass and having a piston thereon slidable within the cylinder, a conduit between the chambers of the cylinder defined by the piston, a working fluid in the chambers and the conduit, an electrically actuated valve in the conduit for blocking the latter, and a switch responsive to operation of the vehicles's service brake for actuating the valve, the valve being operative when actuated by the switch to prevent fluid flow through the conduit between the chambers thereby to lock the cylinder and rod for suppressing relative movement between the sprung and the unsprung mass portions.

3,774,936

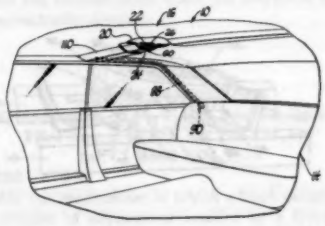
OCCUPANT RESTRAINT SYSTEM

Ronald R. Barnett, Rochester, and George Drach, Jr., Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1970, Ser. No. 81,249

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **13 Claims**



A vehicle body includes front and rear seats and a roof structure overlying the seats. Generally parallel disposed diffuser and pressure vessel tubes are mounted on the roof structure above the front seat and span the body transversely thereof. One end of each tube is sealed. A cross-over passage interconnects the other ends of the tubes. The other end of the pressure vessel tube opening to the passage is sealed by a glass diaphragm. Detonators are located adjacent the glass diaphragm. The detonators are electrically connected with a sensor which senses acceleration pulses of predetermined amplitude and time applied to the vehicle body. A sectioned inflatable cushion is of a width to generally span the body transversely thereof and has one transverse edge portion secured to the diffuser tube. The slots in the tube open to the interior of the cushion. The cushion is of a length so that the other transverse edge portion thereof can be located in a position to engage the pelvic area of any occupant seated on the rear seat when the cushion is inflated from the diffuser tube. A pulley is mounted on the roof structure adjacent each end of the diffuser tube. A continuous loop cable extends over each pulley and is secured at one point to a respective side edge portion of the cushion adjacent the other transverse edge portion. Each cable also passes through a one-way cleat on the body to each side of the rear seat. When the cushion is in a deflated folded or rolled-up condition, the cables are positioned above the headlining. Upon a pulse of the required amplitude and time being applied to the vehicle, the detonators break the glass diaphragm to inflate the cushion from the diffuser tube. As the cushion inflates, it unfolds or unrolls downwardly and pulls the cables through the headlining, around the pulleys, and through the cleats to locate the cushion in a position wherein it provides a barrier for the torso of a rear seat occupant and the other transverse edge portion thereof will engage the pelvic area of any such occupant and exert a rearward and downward restraining force thereon.

3,774,937

SAFETY SEAT BELT

Syuichi Otani, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama City, Japan

Filed June 5, 1972, Ser. No. 259,769

Claims priority, application Japan, Sept. 13, 1971, 46/82614

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **9 Claims**

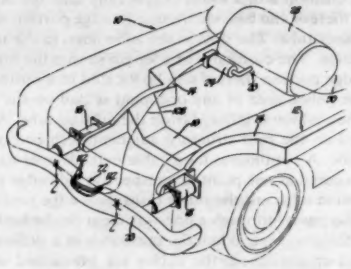
A seat which may be part of a motor vehicle is equipped with a safety seat belt which is adapted to protect a seat occupant from being flung out of the seat through restraint of the seat occupant not only at his laps or thighs, chest and shoulder but at his head and neck during collision condition of the motor vehicle. The seat belt thus includes, in addition to the usual lap belt and shoulder strap, a flexible strip which is arranged to be ready to be stretched in front of the occupant's head and neck when the seat is subjected to an excessive deceleration as in the case of the collision of the motor vehicle. The flexible strip is usually held in a folded condition on the shoulder strip or the lap belt.

3,774,938

VELOCITY RESPONSIVE SENSOR FOR VEHICLE OCCUPANT RESTRAINTS

Vincent A. Orlando, Clearwater, Fla., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1972, Ser. No. 292,085
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **3 Claims**



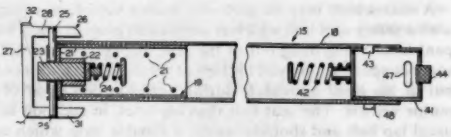
A velocity responsive sensor operative upon impact engagement of a vehicle with an obstacle to sense the total change in vehicle velocity in a short deceleration time period and actuate the occupant restraint prior to the onset of significant deceleration of the occupant compartment of the vehicle if the change in vehicle velocity is greater than a predetermined value. The sensor includes upper and lower frames which open to each other and provide a housing. Each frame encloses and mounts a like sensor including an elongated planar spring arm having one end portion mounted to the frame and the other end portion slidably engaging an abutment surface lying in a vertical plane intersecting the vertical plane of the one end portion at an acute angle. A mass mounted on the other end portion moves horizontally into engagement with a compression spring contact when the free portion of the arm deflects horizontally relative to the one end portion of the arm. A stop for the free portion of the arm includes an arcuate rib on the frame tangentially related to the one end portion of the arm and wrappinly engaged by the arm adjacent such one end portion upon deflection of the free portion of the arm and engagement of the mass with the spring contact. The time period for the mass to change its energy and move into engagement with the spring contact is comparable to or greater than the deceleration time period of the vehicle. The mass and spring contact are connected across a source of power and an occupant restraint.

3,774,939

LOAD RESTRAINING CROSSBAR

Warren L. Freads, and Daniel L. Jensen, both of c/o Union Pacific Railroad Company, 1416 Dodge St., Omaha, Nebr.

Filed Sept. 16, 1971, Ser. No. 181,104
Int. Cl. B60p *7/08*
U.S. Cl. 280—179 B **3 Claims**



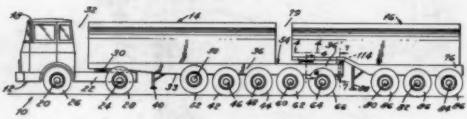
A crossbar for restraining lading in a transport vehicle. A slide is pivotally connected to one end of the bar. The slide is movable along a guide rail which extends horizontally along one side wall of the cargo space. Means are provided which prevent removal of the slide from the guide rail. A second rail extends along the opposite wall of the cargo space. In active position the bar extends across the cargo space between the two rails. A latch bolt is mounted in each end of the bar and in active position each bolt is received in a selected one of a series of apertures formed in the corresponding rail. The bar may be swung to a storage position in which it lies along the side wall of the cargo space.

3,774,940

TRAILER ASSEMBLY

Floyd L. Merritts, 31564 William Ct., Rockwood, Mich.

Filed Feb. 29, 1972, Ser. No. 230,311
Int. Cl. B62d *53/08*
U.S. Cl. 280—408 **2 Claims**



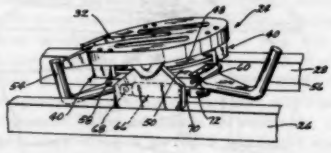
The trailer assembly, pulled by a conventional tractor, includes a front trailer having an extended frame or frame extension on the existing frame, with the extended frame extending rearwardly and being provided with one or more axles with tires on the under side thereof. The rear trailer includes a frame having the front end portion thereof overlying the extended frame on the front trailer. The extended frame carries a rockable or pivotable fifth wheel while the front end portion of the frame of the rear trailer carries a rockable or pivotable fish plate assembly having a kingpin engageable with the fifth wheel to provide a very sturdy connection between the trailers thus eliminating draw bars, tow bars, or cables which are now employed between the trailers. Jackknifing between the trailers and swing and sway motion of the rear trailer with respect to the front trailer are eliminated. The pivot mountings for the fifth wheel and fish plate assembly have horizontal axes which are perpendicular to one another. The pivotable fish plate assembly takes up any side motion between the trailers to prevent excess forces from being exerted by the rear trailer on the extended frame thus preventing the extended frame of the front trailer from warping or breaking.

3,774,941

TRAILER ANTI-JACKKNIFE DEVICE

Henry H. Durr, Papillion, Nebr., assignor to Philip L. Haller, Omaha, Nebr., a part interest

Filed Feb. 14, 1972, Ser. No. 226,133
Int. Cl. B62d *53/06*
U.S. Cl. 280—432 **5 Claims**



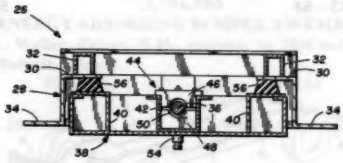
An anti-jackknife device for a tractor semi-trailer combination is disclosed herein. The tractor has a conventional fifth wheel mounted at the rearward end thereof and the trailer has

a kingpin extending downwardly from the lower forward end thereof for detachable connection with the fifth wheel. A plurality of disc brake assemblies are secured to the underside of the fifth wheel and rotatably support a brake disc therein. A hub means is secured to the brake disc and has a pair of opposing locking arms pivotally secured thereto which are movable into locking engagement with recesses in the underside of the trailer. A pneumatic cylinder means is connected to the locking arms for moving the arms between locked and unlocked positions with respect to the trailer. The disc brake assemblies are operatively connected to the tractor brake system so that actuation of the tractor brakes causes the disc brake assemblies to frictionally engage the brake disc to prevent rotation of the same with respect to the fifth wheel which prevents further angular displacement of the trailer with respect to the tractor. An air-hydraulic booster system is operatively connected to the disc brake assemblies to provide the necessary pressure thereto.

3,774,942
ROCKING BOLSTER

John H. Holland, Norman, Okla., assignor to Arkansas Rock and Gravel Co., Mufreesboro, Ark.

Filed Oct. 7, 1971, Ser. No. 187,456
Int. Cl. B62d *53/08*
U.S. Cl. 280—440 **6 Claims**



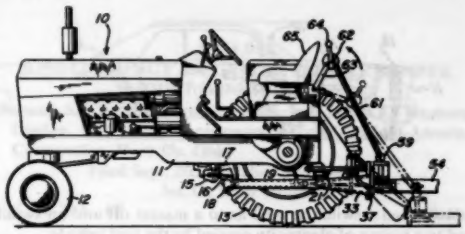
A rocking bolster includes a first box frame which is fixedly supported in the front end of a semitrailer and a second box frame which is supported in the first box frame for pivotal movement about an axis extending longitudinally of the semitrailer. A kingpin depends from the second box frame for cooperation with a contact plate on a tractor to connect the semitrailer to the tractor, and a plurality of resilient members are supported on the second box frame for compressive engagement with the first box frame upon relative pivotal movement between the box frames. The resilient members permit sufficient pivotal movement of the semitrailer about the longitudinal axis to prevent undue stress loads on the trailer and to prevent excessive tipping of the trailer, and at the same time provide sufficient rigidity to prevent buckling of the rocking bolster and the contact plate when the tractor is operated to turn the semitrailer around.

3,774,943
DRAW BAR HITCH

Gregory Schmiesing, R.R. No. 1, New Bremen, Ohio

Filed Aug. 27, 1971, Ser. No. 175,445
Int. Cl. B60d *1/06, 1/14*
U.S. Cl. 280—479 R **13 Claims**

A flexible bar mechanism in which a hitch means has alternative positions of adjustment relative to a fixed frame of reference. In a first or retracted position the hitch means seats interlockingly to a draw bar frame and forms a rigid part thereof. In a second the hitch means unseats relative to the draw bar frame and may assume varying attitudes to facilitate a required hitch. The invention provides for a smoothly effected movement of the hitch parts, whether to or from the

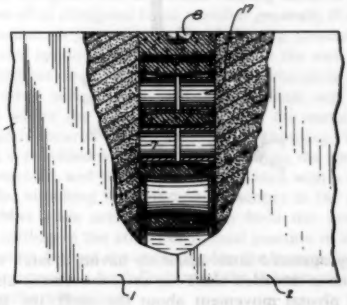


draw bar frame, either manual or powered provision being made for disabling and restoring the wedged relationship of the parts.

3,774,944
CONDUIT JOINT CONSTRUCTION

Stewart E. Slaton, Lighthouse Point, Fla., assignor to Utility Precasters, Inc., Kansas City, Mo.

Filed Oct. 15, 1971, Ser. No. 189,716
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 R **4 Claims**



Concrete conduit sections have embedded liner tubes projecting into cavities formed in the ends of the sections. Aligned tubes in adjacent sections are joined by a sleeve which receives the tubes into tapered ends. The sleeve ends are sealed against a conduit section wall by a resilient collar and reinforcing bars extend through the cavities and into overlapping relation. The entire joint structure is secured by a sealer poured into the abutting sections.

3,774,945
SEQUENTIALLY POSITIONED TRACK SANDING HOPPER OUTLETS

Robert P. Lee, and Poy Lee, both of 52 Tennyson St., Somerville, Mass.

Filed Nov. 12, 1971, Ser. No. 198,375
Int. Cl. B60b *39/10;* **B61c** *15/10;* **B61h** *11/00*
U.S. Cl. 291—38 **7 Claims**

This invention consists of a plastic sand tank mounted in the front of each wheel of a vehicle, the aforesaid sand tank hav-

ing a vertically disposed valve therein that is activated by means of an electromagnet connected by one or more wires to

a brake pedal switch as well as to a master off and on switch and to a source of electricity carried by the said vehicle.

3,774,946

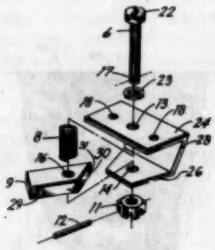
DOOR OR PANEL LATCH ASSEMBLY

Paul E. Hammann, Bettendorf, Iowa, assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Sept. 30, 1971, Ser. No. 185,297

Int. Cl. E05c *9/00*

U.S. Cl. 292—64 **7 Claims**



A rotary operated latch assembly having a latch member mounted on a threaded shaft for axial movement along the shaft and pivotal movement about the shaft, the latch assembly being mounted onto a panel member whereby rotation of the threaded shaft results in the latch member moving toward or away from the panel member engaging or disengaging with a door or panel frame during said movement.

3,774,947

GATE LATCH

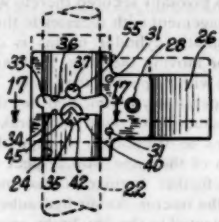
Alan W. Duncan, River Forest, Ill., assignor to Sears, Roebuck and Company, Chicago, Ill.

Filed July 8, 1971, Ser. No. 160,861

Int. Cl. E05c *5/00*

U.S. Cl. 292—68 **4 Claims**

A gate latch mountable for rocking and axially sliding movement on the end bar of gate frame or on a fence post. A pin extends from opposite sides of the bar or post and the latch is provided with an internal recess having oppositely positioned pockets. The pin extensions are received in said recess for movement therein. When the pin extensions are disposed in the pockets, the latch is in locked position preventing opening of the gate. Upon moving the latch upwardly, the pockets are caused to clear the pin extension so that the latch may be rocked clockwise or counterclockwise to open the gate. A key



operated locking element is provided to lock the latch against unauthorized operation.

3,774,948

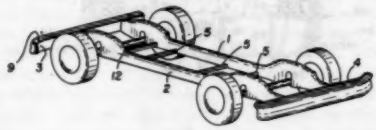
COMBINED VEHICLE CHASSIS AND AIR SUSPENSION SYSTEM

Rene Gouirand, New York, N.Y., assignor to Joseph Mercodante, Greenwich, Conn.

Division of Ser. No. 110,703, Jan. 28, 1971. This application Aug. 28, 1972, Ser. No. 284,031

Int. Cl. B60r *19/00*

U.S. Cl. 293—68 **5 Claims**



A combined vehicle chassis and air suspension wherein elongated air bags having a substantially circular cross-section are physically located within and supported by inverted, U-shaped chassis members. Under no load conditions, the air bags contact the chassis members on only a portion of the circumference and as the load increases, the contact surface between the air bag and the chassis members increases, thereby increasing spring stiffness. The side portions of the inverted U-shaped chassis members are spaced from the sides of the air bags under no load conditions. Under heavy load and when the car turns around a curve, the side portions of the U-shaped members prevent side-sway of the vehicle. Air-bumpers are provided which are coupled to the air system of the suspension system. The air in the air-bumpers acts as an additional reservoir for the air bags of the suspension system to effectively soften the ride of the vehicle and additionally, absorb vehicle impacts.

3,774,949

COLLAPSIBLE TOW BAR

Mathias Eger, 3418 5th Ave. South, Fort Dodge, Iowa

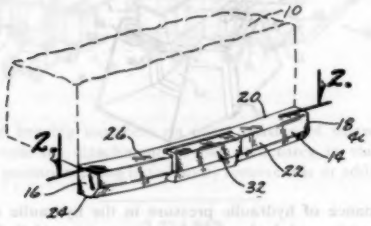
Filed June 20, 1972, Ser. No. 264,536

Int. Cl. B60d *1/16*

U.S. Cl. 293—69 **4 Claims**

A collapsible tow bar for a vehicle is disclosed herein and generally comprises a hollow bumper having the collapsible

tow bar secured thereto and stored therein when not in use. The bumper has a central opening which is selectively closed by a cover element. First and second spaced apart support rods are secured to the bumper within the bumper adjacent the opposite ends thereof. First and second tow bar members are rotatably and slidably secured at one of their ends to the



first and second support rods respectively. The first and second tow bar members may be slidably moved inwardly on the support rods to permit their other ends to be extended outwardly of the central opening in the bumper. The other ends of the first and second tow bar members are adapted to be secured together and are adapted to have a tongue member detachably secured thereto.

3,774,950

ENERGY ABSORBING BUMPER ASSEMBLY

Peter A. Weller, Dover, N.H., assignor to McCord Corporation, Detroit, Mich.

Filed July 1, 1971, Ser. No. 158,814
Int. Cl. B60r *19/08*
U.S. Cl. 293—84 **5 Claims**

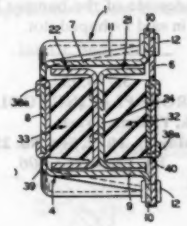
An energy absorbing bumper assembly which includes a bumper means and a pair of connecting links connected to the bumper means at the first ends thereof and converging toward one another in the direction of the second ends thereof. Various support means extend from the second ends of the connecting links and are connected or attached to the frame of a vehicle. Energy absorbing means are included to allow the second ends of the connecting links to move apart and together as the bumper means moves toward and away from the frame. In a number of embodiments, the connecting means are attached to the frame by first and second pairs of support links which are normally disposed in generally parallel relationship with one another. In these embodiments, the connecting links interconnect each pair of support links and the bumper means and move the support links toward and away from one another in response to movement of the bumper means. Various means are utilized in these embodiments for resisting relative movement between the support links to absorb energy as the bumper means moves rearwardly. In yet another embodiment, each pair of connecting links are attached to the vehicle frame by support links which are each pivotally connected to the vehicle frame and have arms extending from the pivotal connection with a connecting link connected to each arm. The energy absorbing means is disposed between one arm of each support link and the vehicle frame.

3,774,951

BONDED ENERGY ABSORBING VEHICLE BUMPER MOUNT CONSTRUCTION

Herman S. Church, Cuyahoga Falls, and James L. Hagener, Canton, both of Ohio, assignors to Teledyne Mid-America Corporation, Hartville, Ohio

Filed Sept. 20, 1972, Ser. No. 290,483
Int. Cl. B60r *19/06*
U.S. Cl. 293—88 **7 Claims**



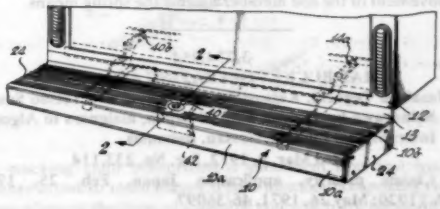
A vehicle bumper mounting construction formed of a generally elongated box-like metal housing member enclosing a portion of an elongated beam member generally H-shaped in cross section. A pair of rubber pads having parallel surfaces are bonded on one surface of each pad to the web of the H-beam member on either side thereof. A metal plate is bonded to the other side of each pad. The H-beam and pads are secured within the housing member and the metal plate on each pad is secured to a side wall of the housing. The metal housing is provided with means for mounting the assembly on an automobile, and the H-beam is provided with a mounting flange for attaching the automobile bumper to the assembly. The rubber pads are pre-loaded to hold the components against rattling in the at-rest or normal position of the mount components. Impact energy applied to the bumper is absorbed by the construction by deflection of the H-beam placing shear stress on the rubber pads.

3,774,952

ALUMINUM BUMPER CONSTRUCTION

Edward Zorn, Encino, Calif., assignor to Chemplate Corporation, Los Angeles, Calif.

Filed July 10, 1972, Ser. No. 270,432
Int. Cl. B60d *1/06*; **B60r** *3/00, 19/04*
U.S. Cl. 293—69 R **12 Claims**



A one-piece bumper assembly for attachment to the rear portion of vehicles comprising a generally vertically extending and concavely shaped face sharply curved to merge with a

grooved horizontal step, the free edge of said step being formed so as to optionally receive a generally vertical kickplate, a plurality of ribs integrally formed with and extending longitudinally along the length of, the rear of said bumper face, two of said ribs forming a T-shaped longitudinal slot, in and along which bolts are slidably adjustable for attachment to brackets. These brackets extend from the rear frame of the vehicle and the bumper is attached thereto by means of said slidably adjustable bolts. The bumper is thereby readily fastened to the rear frame of the vehicle regardless of the distance of the brackets from each other.

A first aperture is provided substantially in the center of said horizontal step, to accommodate a hitch ball, the threaded stem of which passes through said first aperture. An angularly shaped hitch bracket, having an aperture therein, is securely attached to the underside of the bumper so that the aperture coincides with said first aperture. The hitch bracket is bolted to the underside of the bumper by means of a bolt slidably adjustable in said T-shaped slot.

3,774,953

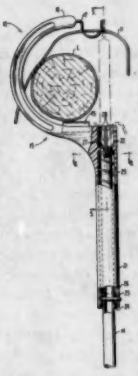
ROPE PLACING TOOL

Edward R. Babcock, Yakima, Wash.

Filed May 11, 1972, Ser. No. 252,249

Int. Cl. A47f *13/06*

U.S. Cl. 294—19 R **7 Claims**



A tool for positioning a rope, or the like, over an elevated object, such as a tree limb or girder, including a substantially C-shaped element to be positioned about the limb or girder and having a means at one end for clamping one end of the rope, and a hollow tube element at its other end disposed about an elongated rod member, rope grasping means at the upper end of the rod, and spring means urging the rod's upper end inwardly of the hollow tube element, the rope grasping means being made to grasp one end of the rope upon upward movement of the rod member against the spring means.

3,774,954

GRAB BUCKET OPERATING APPARATUS

Masahiro Taguchi, Katsushika-ku, Tokyo, and Tetsuo Sasaki, Shinagawa-ku, Tokyo, both of Japan, assignors to Algoship International Limited, Nassau, Bahamas

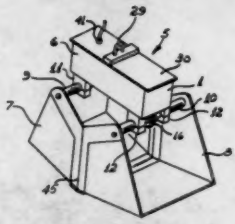
Filed Mar. 9, 1972, Ser. No. 233,114

Claims priority, application Japan, Feb. 25, 1971, 46/11920; May 26, 1971, 46/36097

Int. Cl. B66c *3/02*

U.S. Cl. 294—70 **18 Claims**

A grab bucket operating apparatus in which the half shells of the bucket are mounted on individual torque shafts, each of the torque shafts is provided with a lever and a hydraulic unit is operatively connected to one of the levers, and a link member connects the levers to ensure synchronous opening and closing of the half shells, and an accumulator ensures



maintenance of hydraulic pressure in the hydraulic circuit, and electric and hydraulic controls are provided for the operating mechanism.

3,774,955

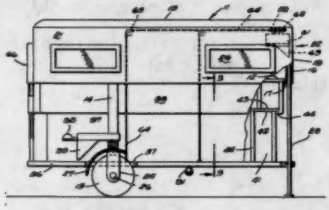
MOBILE HOUSING UNIT

Joseph I. Byer, 2896 Radisson Ave., Windsor, Ontario, Canada

Filed June 10, 1970, Ser. No. 45,068

Int. Cl. B60p *3/34*

U.S. Cl. 296—23 C **8 Claims**



A self-supported mobile housing unit comprising an upper part including a box-like framed structure that is supported on the ground by wheels attached by supports to the framed structure. The upper part has stationary walls. A lower part, that is interconnected with the upper part, has a horizontally extending floor and at least one upper and one lower wall section. The lower part is vertically moveable so as to be contained in the upper part upon actuation of a lifting mechanism carried by the framed structure. Upon movement of the lower part including the floor, the lower wall section and upper wall section move vertically into a telescopic nested position with the stationary walls of the upper part to allow a motor vehicle to be received under the upper part between the supports and coupled to the mobile housing unit. The walls of the upper part and lower part may be provided with openings and a telescoping door to provide egress from and ingress to the mobile housing unit.

3,774,956

PARALLEL ATTACHABLE, TWO STORY EXPANDABLE, TRAILABLE BUILDING STRUCTURES

Richard A. Barlow, 2008 Dundee Rd., Rockville, Md.

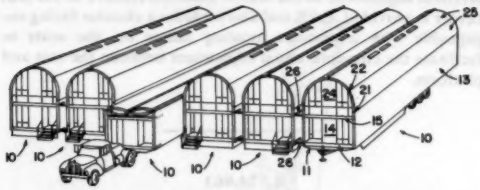
Filed Nov. 22, 1971, Ser. No. 201,082

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 G **4 Claims**

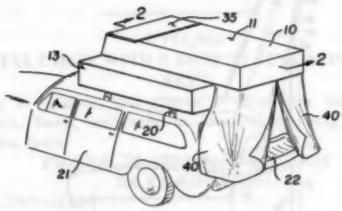
Series of similar mobile homes having roof and wall members hingedly joined to said structures, allowing members to

assume outwardly expanded angularly oriented positions, forming second story living space. Further having angularly



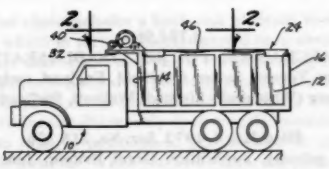
mounted bracing members on outer portion of sidewalls at floor levels for attachment of like structures in stabilized parallel positions, being individually removeable or addable.

3,774,957
COMPACT CAMPER
Peter Basaraba, Watson, Sask, Canada, assignor to The Raymond Lee Organization Inc., New York, N.Y. part interest
Filed Apr. 19, 1972, Ser. No. 245,509
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 MC **3 Claims**



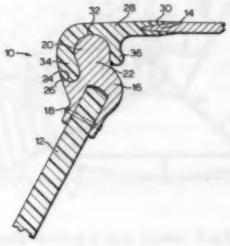
A portable camper unit mounted atop of a station wagon type of automobile which opens upwards and sidewards to provide sheltered quarters and storage space above the roof of the automobile, and is extendable rearwards of the automobile so that attached curtains provide dressing room for the campers, with the opened tail gate of the station wagon providing the floor for said dressing area. In the folded condition, the camper unit provides storage space for the camping equipment.

3,774,958
SHEET METAL COVER FOR A TRUCK BODY
Ervin T. Thorpe, Des Moines, Iowa
Filed Feb. 14, 1972, Ser. No. 225,785
Int. Cl. B60p *7/04*
U.S. Cl. 296—98 **9 Claims**



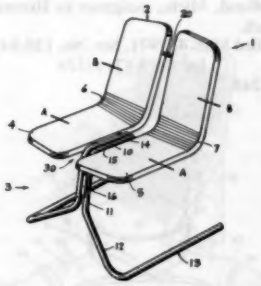
A sheet metal cover for truck bodies is disclosed herein and generally comprises a resilient sheet metal member such as stainless steel or the like wound upon a cylindrical member which is rotatably mounted forwardly of the upper portion of the front wall of the truck body. Guide means are provided on the upper ends of the side walls of the truck body for receiving the lateral edges of the sheet metal member therein when the sheet metal member covers the truck body. The guide means define a sinusoidal configuration to provide lateral strength to the sheet metal member when the sheet metal member covers the truck body. A plurality of cylindrical rods are positioned around the cylindrical member and have rollers thereon to rollably contain the sheet metal member when it is wound upon the cylindrical member. The cylindrical member is driven by a reversible motor or the like.

3,774,959
CONVERTIBLE TOP INTERCONNECTION
Peter E. Brudy, Willowdale, Ontario, Canada, assignor to Aqua-Marine Mfg. Limited, Toronto, Ontario, Canada
Filed Apr. 24, 1972, Ser. No. 246,866
Claims priority, application Great Britain, Apr. 22, 1971, 10,775/71
Int. Cl. B60j *7/18*
U.S. Cl. 296—121 **4 Claims**



An interconnection for a convertible top cover of a marine craft includes cooperating integral members of the windshield and cover. The interconnection is shaped to prevent air pressure-induced disconnection of the interconnection.

3,774,960
STACKING CHAIR
Leif Blodee, 335 E. 16th St., Holland, Mich.
Filed June 20, 1972, Ser. No. 264,499
Int. Cl. A47c *3/04*
U.S. Cl. 297—239 **12 Claims**



A stacking chair comprising a sheetform seat and back member in one or more pieces, a base member comprising two leg members in the form of a tube or rod which are substantial mirror images of each other and each of which has an upper generally horizontal and rearward reach, a forward generally vertical reach, and a forward angularly outwardly extending reach terminating in a generally horizontal rearward reach

constituting a floor-engaging portion of the leg member, a central recess being provided at the forward edge of the seat portion of said chair having dimensions suitable to receive the generally vertical reach of the base member of an identical stacking chair, the stacking height of the leg members and thickness of the seat portion of the sheetform seat and back member enabling close vertical nesting of a plurality of identical chairs upon stacking, at least at some point on said reaches.

3,774,961

TILTING CHAIR

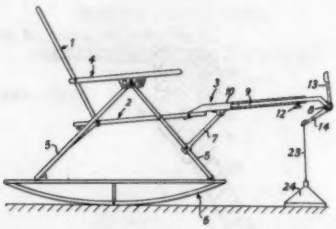
Louis Jules Desire Lecarpentier, Avenue de Verdun, Embrun (Hautes-Alpes), France

Filed Nov. 26, 1971, Ser. No. 202,511

Claims priority, application France, Dec. 15, 1970, 7045507; June 23, 1971, 7122963

Int. Cl. A47c 9/12

U.S. Cl. 297—260 **4 Claims**



The invention provides a device, for rocking a rocking chair, having an elongated support for incorporating on or in a leg-rest of the rocking chair, a foot pedal and a lever arm mounted on said support for pivotal movement about a longitudinal axis, said foot pedal and lever arm being coupled rotationally so as to constitute a two-arm lever, and means for attachment of the free end of said lever arm to a fixed anchorage, such as a floor hook, a suction cup on the floor, or a heavy weight, whereby movement of the foot pedal with the foot causes rocking movement of the chair.

3,774,962

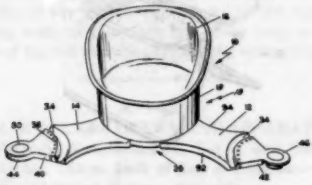
SEAT ARRANGER

Donald Watamura, West Hempstead, N.Y., and Everett L. Duester, Holland, Mich., assignors to Herman Miller Inc., Zeeland, Mich.

Filed Mar. 4, 1971, Ser. No. 120,847

Int. Cl. A47c 1/124

U.S. Cl. 297—249 **7 Claims**



A plurality of organizing platforms are interconnectably linked together with a plurality of seats for movement relative to each other for arranging one or more seats in arbitrary patterns. The platforms are identical one with another and are detachably connected at each end to a seat. The seat preferably has a plurality of arcuatly spaced holes at the base which receive a pin projecting from the ends of a platform. In this fashion the seats and platforms are anchored to each other to prevent lateral movement therebetween although circumferential adjustment of the seat or platform relative to the seat center is provided. Each end also includes a circular facing engageable with a circular locating flange on the seats to facilitate the circumferential adjustment between the seat and platform.

3,774,963

SUSPENSION SEATS FOR VEHICLES

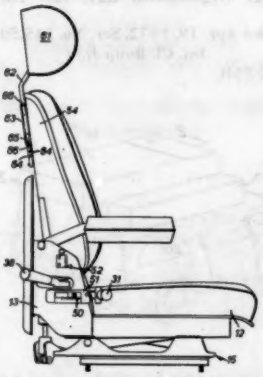
Charles Bertie Lowe, Parklands, England, assignor to Universal Oil Company, Des Plaines, Ill.

Filed July 31, 1972, Ser. No. 276,622

Claims priority, application Great Britain, Aug. 7, 1971, 37,192/71

Int. Cl. B60n 1/02; A47c 3/22

U.S. Cl. 297—338 **11 Claims**



Suspension seat assembly has a torsion bar spring fixed at one of its ends to one end of a pivoted link forming part of a scissors linkage. The other end of the torsion bar is adjustably fixed to the movable seat part. Screw type weight and height adjustment mechanisms are separably operable by an occupant but work together to rotate the adjustable end of the torsion bar. The mechanism automatically adjusts the Up and Down stop positions of the suspension as the height adjustment is made so that the occupant's weight will center the seat in its ride zone of vertical movement regardless of the height to which the seat is adjusted. Mechanisms for tilting the seat back and adjusting the head rest are also disclosed.

3,774,964

MECHANISMS FOR RECLINABLE SEATS

Harold Roy Turner, Sutton Coldfield, England, assignor to H. R. Turner (Willenhall) Limited, Walsall, Staffordshire, England

Filed Jan. 4, 1972, Ser. No. 215,326

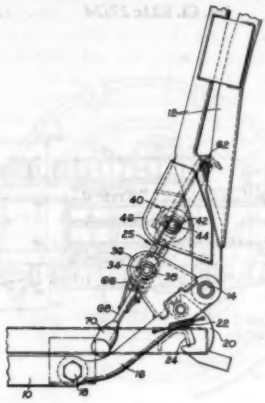
Claims priority, application Great Britain, Jan. 8, 1971, 922/41; Apr. 15, 1971, 9,468/71; Nov. 3, 1971, 51,020/71

Int. Cl. B60n 1/02

U.S. Cl. 297—366 **7 Claims**

The invention provides a seat angle adjusting mechanism comprising a strut to extend between the two pivoted parts of the seat, the strut having teeth and being engaged with a hous-

ing, both the housing and the strut being pivotally mounted, one on each part of the seat, the strut also having a cam which



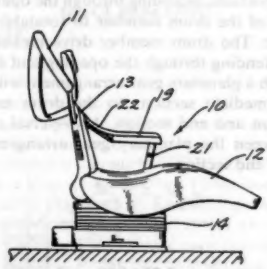
can be turned about the strut axis to displace the strut laterally, about its pivot, and relative to the housing, to take the teeth into anout of mesh.

3,774,965

DENTAL CHAIR WITH A SWITCH ACTUATING ARM REST

William P. Brandt, and James D. Huffman, both of Des Moines, Iowa, assignors to Den-Tal-EZ Mfg. Co., Des Moines, Iowa

Filed Feb. 28, 1972, Ser. No. 230,020
Int. Cl. B60n 1/06
U.S. Cl. 297—417 **4 Claims**



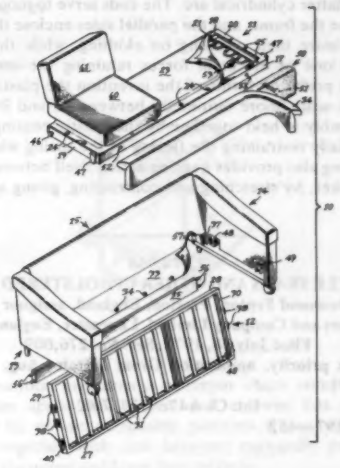
The dental chair includes a back unit pivotally mounted on a seat unit which in turn is tiltably carried on a vertically adjustable base unit. Each unit has a corresponding reversible operating motor. An arm rest pivotally supported on the back unit is movable to an upright position to actuate a switch on the back unit for simultaneously operating the motors to move the units to relative positions to provide for an upright or seated chair position. When the arm rest is moved to an arm supporting position the switch is actuated to simultaneously operate the motors to move the units to relative positions providing for a reclined chair position. The upright position and reclined position are automatically defined by limit switches corresponding to the units and operatively associated with their respective motors.

3,774,966

KNOCK-DOWN SOFA

Doris Clay Faulkner, 1219 Grandview Dr., Nashville, Tenn., and Hal R. Swann, Jr., 915 Overton Lea Rd., Nashville, Tenn.

Filed Nov. 26, 1971, Ser. No. 202,177
Int. Cl. A47c 7/00
U.S. Cl. 297—440 **4 Claims**



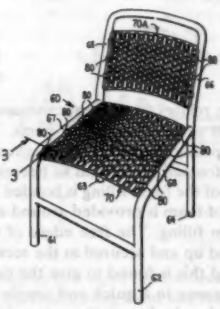
A knock-down sofa having a seat frame, back frame and a pair of end or arm frames, a back envelope extending between and attached to the rear portions of the arm frames, and cooperative means on the arm frames and back frame for slidably receiving the back frame within the back envelope, and cooperative means for receiving the seat frame between the arm frames in assembled position.

3,774,967

SEATING AND SUB-ASSEMBLY FOR SEATS AND BACKS

David L. Rowland, 49 W. 55th St., New York, N.Y.

Division of Ser. No. 126,808, March 22, 1971, Pat. No. 3,720,568. This application July 3, 1972, Ser. No. 268,870
Int. Cl. A47c 7/00, 7/14
U.S. Cl. 297—445 **30 Claims**



Seats and backs for chairs and other seating units are made as a sub-assembly of sinuous spring wires. For example, a rim, typically having straight ends joined by usually parallel sides shaped as circular arcs, encloses, and its straight ends are attached to, the opposite ends of each of a series of the sinuous

spring wires, which extend between them in a circular arc paralleling those of the rim sides. Each of the two extreme spring wires is preferably tangent at each cycle to one of those sides, and each wire touches its adjacent wire at least once per cycle. A thin sleevelike plastic coating surrounds the wires and follows their sinuous shape. It also surrounds the rim and links the wires and the rim together and links the wires themselves together wherever they touch, into a unitary assembly shaped as a cylindrical arc and intended to be flattened somewhat when installed on a chair frame, to place the springs in tension along a flatter cylindrical arc. The ends serve to mount the assembly on the frame, and the parallel sides enclose the springs and minimize their catching on clothing, while the tension provides one of the main forces retaining the assembly in place. In preferred forms of the invention the plastic coating has an A-scale Shore durometer between 45 and 90, so that the assembly is held together by the plastic coating without substantially restraining the flexing of the spring wires, while the coating also provides a spring action itself between the adjacent wires, by stretching and contracting, giving a two-way stretch.

3,774,968

VEHICLE SEATS AND OTHER UPHOLSTERED ITEMS

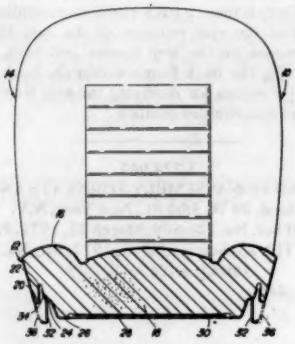
Sidney Desmond Fenton, Preston, England, assignor to Storey Brothers and Company Limited, Lancaster, England

Filed July 28, 1972, Ser. No. 276,009

Claims priority, application Great Britain, Aug. 3, 1971, 36,524/71

Int. Cl. A47c *7/20, 7/02*

U.S. Cl. 297—452 **8 Claims**



This invention relates to the seat cushions or back rests of vehicle seats and other upholstered items. The seat cushion consists of a shaped cover within which a resilient foam filling which has been foamed in situ and so becomes bonded to the cover. The base of the foam filling is bonded to a frame for the seat and a skirt of foam is provided around at least part of the edge of the foam filling. The free edges of the shaped cover have been tucked up and secured in the recess defined by the skirt of foam and this is found to give the cushion a neat and attractive appearance in a quick and simple fashion. According to a preferred embodiment the recess defined by the skirt of foam is aligned with the upstanding edge of the frame of the seat, so locating the cushion accurately. Additionally if the recess is much deeper than necessary to accommodate the edge of the frame, this improves the comfort of the seat because the user will not notice the edge of the frame even though the resilient filling has been depressed.

3,774,969

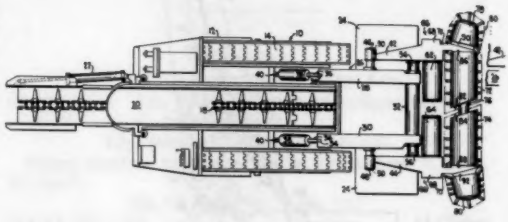
CONTINUOUS MINING MACHINE

Maurice K. Lebegue, Nashville, Ill., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Dec. 22, 1971, Ser. No. 210,916

Int. Cl. E21c *27/24*

U.S. Cl. 299—76 **16 Claims**



The continuous mining machine includes a body portion mounted on endless tracks with a boom member pivotally secured thereto and extending forwardly therefrom. A drum member is rotatably mounted on the front end of the boom member and has cutting elements extending therefrom. The drum member has a pair of axially aligned intermediate sections and a pair of end sections arranged in non-parallel relation with the intermediate sections, and extending forwardly relative thereto. Along the front portion of the drum member the end section inner edge portions are positioned closely adjacent to the outer edge portions of the intermediate sections so that the cutting elements extending therefrom overlap to provide a continuous cutting pattern along the drum member front portion. The drum member end section inner edge portions are spaced from the intermediate section outer edge portions along the rear portion of the drum member to provide an opening between the end sections and the intermediate sections along the rear portion of the drum. The boom member has front end portions extending through the openings into the inner portion of the drum member to rotatably support the drum member. The drum member drive means includes an input shaft extending through the opening and drivingly connected through a planetary gear arrangement within the drum member intermediate sections to the drum member intermediate section and end section. A universal connection is provided between the planetary gear arrangement and the drum member end section.

3,774,970

SEGMENT WHEEL BALLAST FOR A TRACTOR

Gerald Francis Murphy, Cedar Falls, and Stanley Harold Ehlers, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sept. 13, 1972, Ser. No. 288,656

Int. Cl. B60b *15/28*

U.S. Cl. 301—41 W **6 Claims**

A ring-shaped wheel ballast composed of a plurality of weight segments for increasing the traction of a tractor is configured in such a manner that only one bolt is required to mount each weight segment to the wheel disc. Each weight segment has a beveled longitudinal edge and a complementary beveled transverse edge. The segments are mounted on the wheel disc in abutting relationship such that the longitudinal edge of one weight segment mates with the transverse edge of an adjoining segment. This mating laterally locks one end of each weight segment and a solitary bolt and nut arrangement

securely fastens the opposite end of each segment to the wheel disc. The weight segments are also adapted for releasably carrying perpendicular projecting threaded dowls or bolts such

that a succeeding wheel ballast can be mounted on the wheel disc in side-by-side stacking relationship with the first wheel ballast.

3,774,971

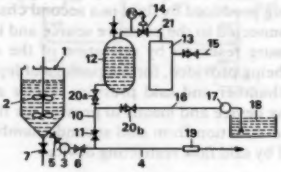
SAFETY DEVICE FOR A SYSTEM OF HYDRAULICALLY TRANSPORTING SOLID MATTERS

Toyotaro Shimizu, and Kenichi Mizuno, both of Tokyo, Japan, assignors to OJI Paper Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1971, Ser. No. 199,107

Int. Cl. B65g *53/30*

U.S. Cl. 302—15 2 Claims



In a system of hydraulically conveying solid matters adapted to hydraulically transport a mixture of the solid such as wood chip or wood bark through a pipeline to a destination, a safety device which comprises a pressure liquid tank containing a pressure water or liquid and a pressure air or gas therein, and a pressure liquid supply line communicating said pressure liquid tank with the pipeline. Said safety device permits the liquid contained in said pressure liquid tank to be delivered through said pressure liquid supply line to the pipeline in case of emergency with the help of the expanding pressure of the air or gas in said pressure liquid tank.

3,774,972

PNEUMATIC CONVEYER CHUTE

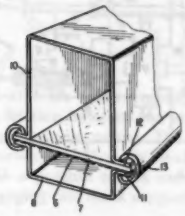
Johann-Claus Grapengiesser; Heinrich Klein-Albenhausen, both of Hamburg; Adrian Van Hees, Norderstedt, and Gerhard Siefert, Reinbek, all of Germany, assignors to Claudius Peters, A.G., Hamburg, Germany

Filed Apr. 29, 1971, Ser. No. 138,530

Claims priority, application Germany, May 2, 1970, P 20 21 493.1

Int. Cl. B65g *53/20*, *53/52*

U.S. Cl. 302—29 3 Claims



This invention concerns a conveyor chute comprising a housing, an upper box section and a lower box section, separated by an air permeable partition whose edges are clamped together with and between outwardly projected flanges of the upper and lower box sections.

3,774,973

VALVES FOR CONTROLLING FAULT INDICATORS IN VEHICULAR HYDRAULIC BRAKING SYSTEMS

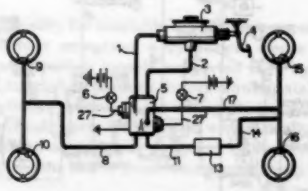
Philip Sidney Baldwin, Florence, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Apr. 10, 1972, Ser. No. 242,536

Claims priority, application Italy, Apr. 16, 1971, 68266 A/71

Int. Cl. B60t *8/26*

U.S. Cl. 303—6 C 16 Claims



This invention relates to a valve for connection in hydraulic brake systems of the kind having front and rear brake circuits with a pressure reducer incorporated in the rear brake circuit. The valve has at least one member which is moved by the pressure in the rear brake circuit when there is a fault in the front brake circuit to establish direct communication with the rear brake circuit, by-passing the pressure reducer to maintain braking efficiency, while at the same time establishing an electrical circuit for a fault indicator such as a warning lamp.

3,774,974

SAFETY INSTALLATION FOR TWO-CIRCUIT BRAKE SYSTEMS, ESPECIALLY OF MOTOR VEHICLES

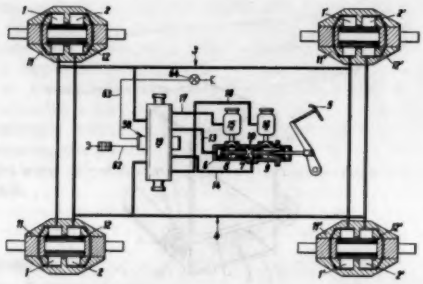
Erich Braun, Rielinghausen, Germany, assignor to Porsche K.G., Stuttgart-Zuffenhamsen, Germany

Filed June 14, 1972, Ser. No. 262,612

Claims priority, application Germany, June 22, 1971, P 21 30 758.4

Int. Cl. B60t *13/00*

U.S. Cl. 303—6 R 37 Claims



A safety installation for two-circuit brake systems, especially of motor vehicles, in which two mutually independent brake circuits, each equipped with its own line system and independent wheel brake cylinders, is supplied with pressure fluid by a master brake cylinder constructed as tandem-cylinder with pistons movable with respect to one another; a closure mechanism common to both brake circuits is thereby connected directly in the output of the master brake cylinder which in case of pressure loss in one brake circuit automatically closes the pressure medium supply into the ineffective brake circuit during the actuation of the brake system by the pressure that builds up in the effective brake circuit.

3,774,975

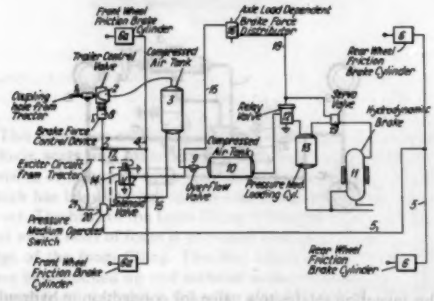
BRAKE SYSTEM FOR THE TRAILER OF A TRACTOR-TRAILER COMBINATION

Herbert Schmidt, Frankfurt-Unterliederbach, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 11, 1972, Ser. No. 216,995

Int. Cl. A46d *1/04*

U.S. Cl. 303—7 12 Claims



A brake system for the trailer of a tractor-trailer combination is controlled by a driver in combination with the continuous brake and friction (service) brake of the tractor. The inventive brake system includes a friction brake system including known components connected to a hydrodynamic brake including known components, said hydrodynamic system being controlled by the pressure medium (compressed air) tank of said friction brake system when the hydrodynamic system is actuated through means of a driver controlled solenoid valve. The hydrodynamic brake system will be used for continuous braking (down hill braking) and, thus, the wear of the friction brakes of said friction brake system will be reduced, since said friction brake system will be resting, when said hydrodynamic brake system is actuated, but prepared to provide an additional braking for stopping when required. Operation of the friction brake system for said additional braking will deactivate said hydrodynamic brake system. According to a second embodiment disclosed the hydrodynamic brake system can be used as an additional service brake to assist the friction brake system.

3,774,976

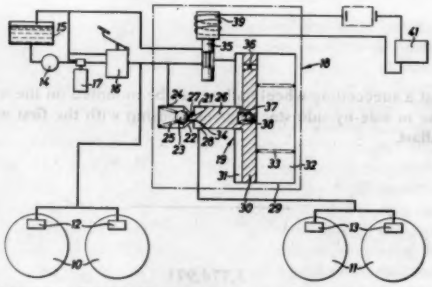
ANTI-SKID CONTROL MEANS FOR LIQUID PRESSURE BRAKING SYSTEMS

David Parsons, Tachbrook Rd., Leamington Spa, England

Filed Feb. 4, 1972, Ser. No. 223,563

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F 11 Claims



Anti-Skid control means for liquid pressure vehicle brakes operated by pressure from a source controlled by a driver's valve in which skid sensing means control a valve to shut off brake motor cylinders from the pressure source and a plunger moving to increase the volume of the shut-off part of the system, the plunger moving in a first chamber, in which braking system pressure acts on it to maximise the volume of said chamber and normally being held against such pressure by the opposing action of a spring and of the source pressure acting on a movable wall, the fluid pressure providing the said opposing action being produced by fluid in a second chamber which is normally connected to the pressure source and is connected to a low pressure reservoir by operation of the skid sensing means, there being provided, for the passage of liquid between said second chamber and said pressure source and drain, a flow-restricting device and means to provide for flow of liquid in the outward direction from said second chamber, at a rate not controlled by said flow restricting device.

3,774,977

ANTISKID BRAKE CONTROL SYSTEM

Werner Fink, and Dieter Kircher, both of Frankfurt, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 21, 1972, Ser. No. 236,725

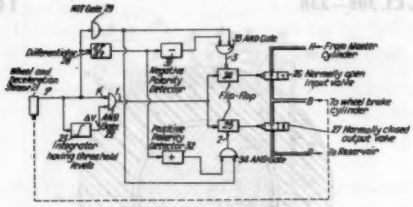
Claims priority, application Germany, May 7, 1971, P 21 22 545.6

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 P 10 Claims

This invention relates to an antiskid brake control system wherein the control member contained in the brake circuit adjusts the brake pressure in the brake circuit in response to three different signal combinations each of the signals of each of the signal combinations are different signals derived from

the deceleration signal present at the output of a deceleration sensor cooperatively mounted with respect to a wheel of a motor vehicle. The control system of the present invention reduces to a minimum the oscillations of the wheel suspension and the wheel axis generated by the antiskid control systems



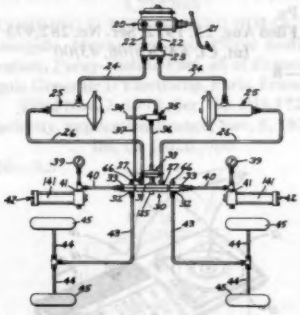
of the prior art and does not respond to the transient oscillations present in the control cycles of the prior art following the first control cycle and thereby eliminates the transient oscillation from the control signals controlling the control member in the brake circuit.

3,774,978

AUXILIARY HYDRAULIC BRAKE LOCK

Fredric J. Staunton, Madison Lake, and Vincent J. Tillman, St. Peter, both of Minn., assignors to Minnesota Automotive, Inc., Mankato, Minn.

Filed Apr. 24, 1972, Ser. No. 246,649
Int. Cl. B60r 25/08; B60t 17/16
U.S. Cl. 303—89 10 Claims



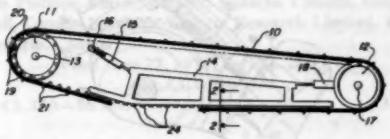
An improved brake locking apparatus for hydraulic brake systems having an accumulator and an accumulator control unit. A pressure control element in the accumulator maintains a fluidic pressure in a closed brake system equal to that of a precharged pressure. A pair of sequentially operated lock valves in the accumulator control unit block fluid flow from the brake cylinders to the master cylinder when the braking system is locked, and sequentially unseat to gradually release the back pressure flow to the master cylinder when the braking system is unlocked. Control valves in the accumulator control unit cooperate with the sequentially operated lock valves to allow fluidic precharging of the accumulator by the master cylinder when the braking system is locked, and isolate the accumulator from the hydraulic braking system when the braking system is unlocked.

3,774,979

SNOWMOBILE TRACK WITH FRICTION REDUCING MEANS

Marvin W. Harris, Brainard, Minn., assignor to Scorpion, Inc., Crosby, Minn.

Filed June 26, 1972, Ser. No. 266,296
Int. Cl. B62d 55/24, 55/10
U.S. Cl. 305—24 9 Claims



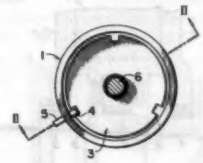
An improved snowmobile track embodying a means for reducing the sliding friction between the inner surface of the track and a track supporting means. The friction reducing means includes a plurality of relatively small, hard beads partially embedded into a portion of the inner surface of said track for slidably engaging said track supporting means.

3,774,980

SLEEVE BEARING ASSEMBLY

Tomomi Katoh; Masayasu Aono, and Toshio Fujinami, all of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 205,227
Claims priority, application Japan, Dec. 30, 1970, 45/133697 (Utility Model)
Int. Cl. F16c 35/02
U.S. Cl. 308—15 2 Claims



A bearing assembly for rotatably supporting a capstan shaft of a tape recorder comprises a cylindrical sleeve bearing formed of brass which is loosely supported by a cylindrical casing having internal projections for preventing axial shifting of the brass cylinder relative to the casing. Radial projections from the cylindrical casing are received within axially extending grooves formed on the outer periphery of the brass sleeve bearing to prevent the sleeve from rotating relative to the casing.

3,774,981

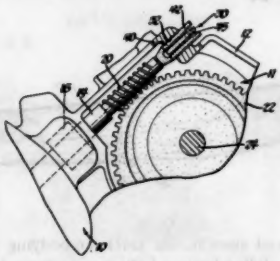
INSERT FOR SETTING ARMATURE SHAFT END POSITION

Lloyd L. Kuck, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1972, Ser. No. 303,194
Int. Cl. F16c 25/00
U.S. Cl. 308—166 2 Claims

In a preferred form, this disclosure relates to a plastic thrust bearing for engaging and setting the axial end position of an

armature shaft of a dynamo-electric machine. The thrust bearing comprises a generally cylindrical plug which is adapted to be inserted within a threaded opening in a housing containing the armature shaft until its forward end thereof abuttingly engages the end of the armature shaft and an insert or wedge in-



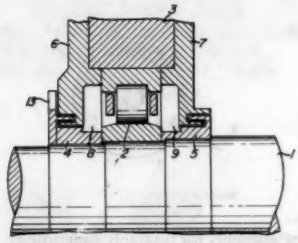
tegrally connected to the plug via fracturable webs. The plug is bifurcated to provide a pair of spaced legs and the wedge is adapted to be driven between the legs to radially expand the same and cause the teeth of the threaded opening to bite into the legs to securely retain the thrust bearing in place.

3,774,982

BEARING DEVICE FOR ROTARY MACHINES

Toshio Nakamura; Hitoshi Egawa, and Sadaharu Kawai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1971, Ser. No. 203,962
Int. Cl. F16c *33/76*
U.S. Cl. 308—187.1 **17 Claims**



A bearing device for rotary machines, e.g. motors for vehicles, which is so designed as to prevent air from flowing through a bearing element and thereby to prevent intrusion of water droplets and dust into said bearing element.

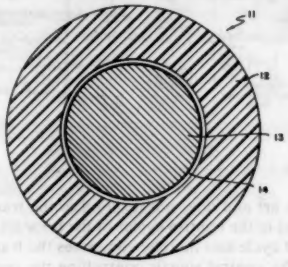
This bearing device is particularly adapted for use in supporting the portion of the rotary shaft of a rotary machine penetrating through the housing of the rotary machine and comprises a dust seal having a fan effect provided at a portion located exterior to the rotary machine. The fan effect of the dust seal offsets the flow of air otherwise passing through the bearing element from the exterior to the interior of the rotary machine under the influence of negative pressure created within the rotary machine during operation, whereby the instrusion of dust and water droplets, present in the atmosphere, into the bearing element is prevented and movement of a lubricant within the bearing element into the rotary machine is also prevented.

3,774,983

LOW FRICTION BEARING-JOURNAL ARRANGEMENT

Paul Lagally, Annapolis, Md., assignor to the United States of America as represented by the Secretary of the Navy

Continuation-in-part of Ser. No. 6,187, Jan. 27, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 212,630
Int. Cl. F16c *33/20*
U.S. Cl. 308—238 **1 Claim**



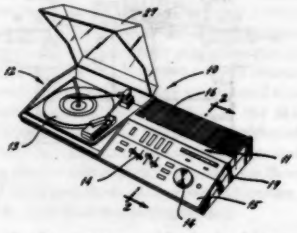
A new type of bearing-journal arrangement, which can operate with water as the lubricant or in a dry environment, displaying a kinetic coefficient of friction in the wet or dry state of less than 0.2, showing no sign of vibrational motion and being capable of bearing a low load of 100–1,000 psi.

3,774,984

CABINET STRUCTURE

Ronald C. Banko, Cherry Hill, N.J., and Thor F. Olsony, Taipei, China/Taiwan, assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed Aug. 23, 1972, Ser. No. 282,972
Int. Cl. A47b *8/06, 43/00*
U.S. Cl. 312—8 **1 Claim**



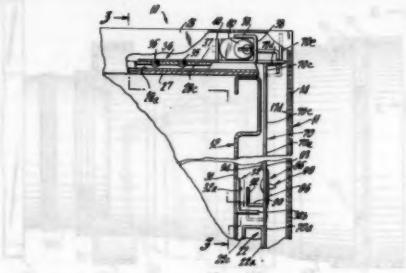
Cabinet structure assemblable in a number of different sizes, from a minimum number of major parts, whereby to house audio components in various combinations. The cabinet of the invention is featured by the use of a pair of rigid rails having a given spacing defining the front-to-back dimension of the cabinet, and being of a length to define the side-to-side dimension desired in a particular cabinet. A pair of end caps cooperate with the rail ends to maintain the latter in spaced relation. The end caps, floor structure, audio components, and cover means for the latter, are all supported by the pair of rails.

3,774,985

FILE LOCKING MECHANISM

William Chovanec, Montvale, and Peter Heck, Teaneck, both of N.J., assignors to Art Steel Company, Inc., Bronx, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,103
Int. Cl. E05b *65/46*; E05c *15/04*
U.S. Cl. 312—217 8 Claims



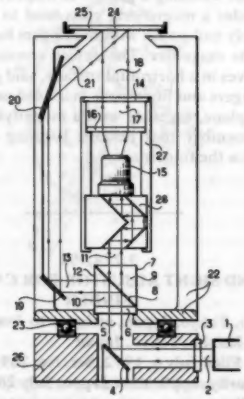
When the lock is pushed-in, a cam which moves with the lock, causes a vertical lock rod, on which catches are mounted, to be cammed down and a spring to be loaded. Catches on the lock rod then fall in front of drawer stops of closed drawers, to lock said drawers. When the lock of the file cabinet is unlocked with a key, it is projected forwardly and the loaded spring then raises the lock rod to cause the catches to clear the draw stops, to unlock the drawers and allow them to be pulled to open positions. If the projected lock is pushed-in while the drawer is open, and the open drawer is thereafter shut, the drawer will be automatically locked, because a cam on a catch of the lock rod, is engaged by the drawer stop of the pushed-in drawer, to cause the lock rod to be moved down, and allow the drawer to be fully closed. When the drawer stop clears the cam on a catch, the lock rod is snapped up by the loaded spring to bring the catch in front of the retracted drawer stop, to lock the drawer in closed condition.

3,774,986

RECORDING SUPERIMPOSED HOLOGRAMS

Jacques Bourgoin, Montgeron; Jean-Pierre Budin, Paris, and Rene Lenfant, Paray-Vietille-Post, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Nov. 2, 1972, Ser. No. 303,172
Claims priority, application France, Nov. 5, 1971, 7139858
Int. Cl. G02b *3/00*
U.S. Cl. 350—3.5 13 Claims



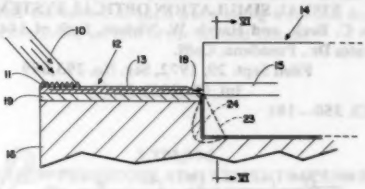
Where superimposed holograms are produced on the same photosensitive element by recording the interferences of two coherent beams comprising a reference beam and an object beam with each reference beam being, for each object, in a different direction from the preceding ones in relation to the photosensitive element and achieved by successively rotating the same light beam, the same beam and said object beam are subjected respectively to a rectilinear polarization in a predetermined direction and the rectilinear polarization directions of the object and reference beams are subjected to a rotation identical to that of said same beam.

3,774,987

COUPLING OF LASERS TO OPTICAL FIBRES

Louis Philippe Boivin, Ottawa, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed June 27, 1972, Ser. No. 266,674
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG 3 Claims



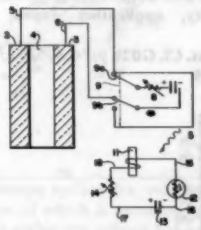
A laser is coupled to an optical fibre by coupling the laser beam to a planar waveguide, and coupling the waveguide to the fibre. Particularly the laser beam is coupled to the planar waveguide by a grating. For ease in obtaining and maintaining good alignment between waveguide and fibre core, the fibre is positioned in a groove in a support member. Crystallographic etching a Vee groove gives a simple and effective way of forming the groove in the support member.

3,774,988

VARIABLE LIGHT-FILTERING DEVICE

Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 854,522, Sept. 2, 1969, Pat. No. 3,652,149. This application June 21, 1971, Ser. No. 155,112
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 8 Claims



This invention relates to light filters employing redox compounds that are substantially light-transmitting in their oxidized state and capable of forming a stable colored free radical upon the addition of electrons. The colored free radical formed in response to the flow of electric current renders the device light-absorbing. To restore the original light-transmitting properties, the colored free radical may be readily reoxidized, for example, by reversing the direction of current flow.

3,774,989

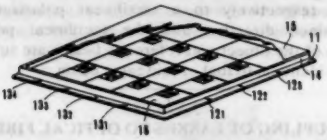
PATTERN DISPLAY APPARATUS

Isao Takahashi, Watarai-gun, Japan, assignor to ISE Electronics Corporation, Ise City, Mie Prefecture, Japan

Filed Oct. 20, 1972, Ser. No. 299,428
Claims priority, application Japan, Oct. 23, 1971, 46/84242
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC 4 Claims

In a pattern display apparatus of the class comprising a pair of insulator substrates, one of which being transparent, a plu-

rality of row and column electrodes which are disposed in a matrix between the insulator substrates, and a liquid crystal



filled in the space between the insultor substrates, the row and column electrodes are provided with a plurality of parallel interleaved teeth at respective cross-points therebetween.

3,774,990

VISUAL SIMULATION OPTICAL SYSTEM

James C. Beck, and Harrie W. Nielsen, both of 1445 Pegfair Estates Dr., Pasadena, Calif.

Filed Sept. 29, 1972, Ser. No. 293,689

Int. Cl. G02b *13/10*

U.S. Cl. 350—181 **2 Claims**

An optical system for distorting an image projected from a film, or the like, to produce simulated viewpoint displacement. The invention improves on the performance of conventional systems using two rotatable fixed anamorphosers in the form of cylindrical lenses by replacing the lens farthest from the film with a rotatable prism system. The latter is optically and mechanically interchangeable with the cylindrical lens which it replaces in present commercial visual systems for aircraft simulations, for example.

3,774,991

ACHROMATIC TELEPHOTO OBJECTIVE LENS

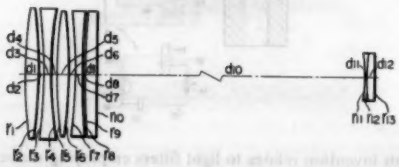
Yoshiyuki Shimizu, Kawasaki, Japan, assignor to Nippon Kogaku, K.K., Tokyo, Japan

Filed Dec. 20, 1971, Ser. No. 209,617

Claims priority, application Japan, Dec. 25, 1970, 45/125634

Int. Cl. G02b *9/34, 9/62, 13/02*

U.S. Cl. 350—215 **6 Claims**



An achromatic objective lens comprises three to five components, of which at least two are positive and at least one is negative. At least one of the positive components is formed of fluophosphate crown glass or phosphate crown glass. At least one of the other positive components is formed of barium flint glass. At least one of the negative components is formed of lanthanum glass or antimony flint glass.

3,774,992

OPTICAL FRAMING DEVICE FOR PHOTOGRAPHIC CAMERAS

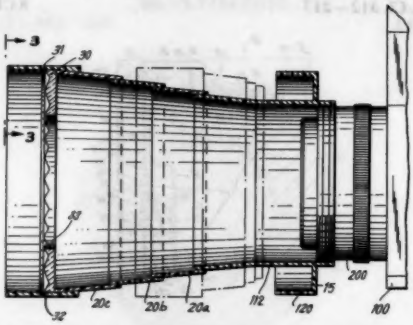
Irving Steiner, 30 Edwards Rd., Mastic Beach, L. I., N.Y.

Filed Mar. 6, 1972, Ser. No. 232,056

Int. Cl. G02b *27/02*

U.S. Cl. 350—236 **5 Claims**

A tubular telescoping member of concentric, translucent plastic rings is provided at one end with a mount adapted to grip the accessory ring of a camera lens assembly and with a centrally pierced diffusing lens at the other. Light passing through the central orifice of the diffusing lens is unaffected by the optical framing device and produces a clear, true image on the film. Light entering the objective lens after passing



through the diffusing lens, in combination with the light entering through the translucent periphery of the tubular member, produces concentric rings of differing brightness and color on the film, surrounding the aforementioned image in the center of the negative.

3,774,993

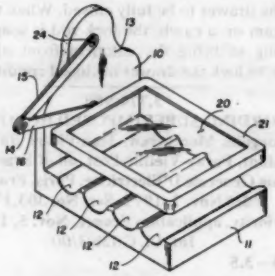
FINGER NAIL INSPECTION UNIT

Esther E. Senff, 209 N. Swall Dr., Beverly Hills, Calif.

Filed May 2, 1972, Ser. No. 249,502

Int. Cl. G02b *7/02*

U.S. Cl. 350—243 **1 Claim**



A device for enabling a person to inspect the fingernails of one hand under a magnifying glass, and to dress said fingernails and apply nail polish with the fingers held in a fixed position under the magnifier. The device consists of a stand with parallel grooves in a horizontal surface, said grooves serving to locate the fingers and fingernails in a fixed position, in approximately one plane, together with a magnifying glass mounted to an arm member that permits locating the magnifier as desired to view the fingernails.

3,774,994

LENS AND SIGHT ADJUSTOR FOR CAMERA VIEW FINDER

Fumio Urano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 6, 1972, Ser. No. 269,382

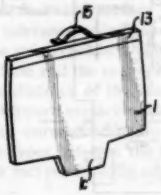
Claims priority, application Japan, July 28, 1971, 46/67227 (utility model)

Int. Cl. G02b *7/02*

U.S. Cl. 350—252 **14 Claims**

A lens for a sight adjustor on a camera view finder has a resilient portion which compresses when a projection on the

lens periphery is inserted into a hollow in the camera view finder's housing. The compression is accomplished by means of a manipulative portion on the lens which projects through a cut-out portion of the view finder housing for manipulation by the user's fingers. The inner portion of the view finder housing is stepped to form a larger and a smaller opening therein. In this manner, when the lens projection is inserted into the hollow



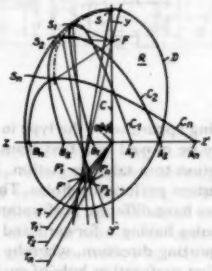
and the lens compressed by force of the user's fingers on the manipulative portion of the lens, the lens is adapted to slide into the housing's larger opening to rest against the stepped portion. The housing also includes engaging grooves for engaging a peripheral portion of the lens when it is in position against the stepped portion of the housing to prevent the lens from inadvertently sliding out of contact with the stepped portion.

3,774,995

REFLECTOR FOR PROJECTING OR RECEIVING RADIATION

Samuel Leon Perret, 24, rue Matile, Neuchatel, Switzerland

Continuation of Ser. No. 849,813, Aug. 13, 1969, abandoned.
This application May 20, 1971, Ser. No. 145,581
Claims priority, application Switzerland, Aug. 21, 1968, 12542/68
Int. Cl. G02b *5/10*
U.S. Cl. 350—294 **8 Claims**



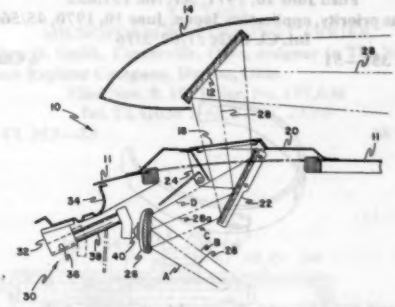
A reflector for projecting radiation from its focus, or for receiving radiation to focus it having a surface with sections by planes all passing through a common point located in a reference plane. Each of the sections passes through at least one straight line in the plane and are conic sections defining a first system. The sections of the surface by planes perpendicular to the reference plane are conic sections defining a second system. The vertices of the conic sections of said first system lie on at least one conic section of the second system. The conic sections of the first system define at least one chord perpendicular to the axis of its conic section and lying along the straight line corresponding to the conic section. A focus of one of the conic sections of the first system is a focus of at least one conic section of said second system so that the radiation emitted from, or received by, the focus after or before reflection by the reflector, cuts at least one plane which passes through the chord and forms an angle with the reference plane along at least one trace that defines conic sections of the same kind as those of the first system, or that defines, in the limiting case, a straight line. The trace generated by the reflector corresponding to the respective conic section of the first system and having in the reference plane the same chord as the conic section, and the vertex of such trace being a second focus of the respective conic section of the second system.

3,774,996

REARVIEW PERISCOPE ADJUSTMENT MEANS FOR VEHICLES

John F. Donnelly, Holland, Mich., assignor to Donnelly Mirrors, Inc., Holland, Mich.

Continuation of Ser. No. 167,730, July 30, 1971, abandoned.
This application Aug. 22, 1972, Ser. No. 282,705
Int. Cl. G02b *5/08*
U.S. Cl. 350—302 **19 Claims**



A rearview periscope system for vehicles including three mirrors, at least one of which is mounted within the vehicle. This mirror located within the vehicle has a novel mirror supporting and adjustment means which allows the adjustment of both the distance of said mirror from the other mirrors along the central sightline of the reflected mirrors, and the angular position of the plane of said mirror with respect to the planes of the other mirrors.

3,774,997

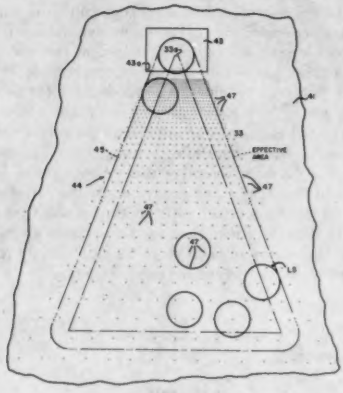
FILTER ARRANGEMENT

Michael A. Kott, Marlboro, Mass., assignor to AAI Corporation, Cockeysville, Md.

Continuation of Ser. No. 888,264, Dec. 29, 1969, abandoned.
This application Oct. 21, 1971, Ser. No. 191,468
Int. Cl. G02b *5/20*
U.S. Cl. 350—314 **22 Claims**

A graduated digital analog filter which may be employed in a hit indication system for a target having a light transmission source, in which the digital filter may be disposed in a photoscope of a light detection source and in which the digital

analog filter serves to effect variation in transmitted energy from the target light source to the light detection device of the photoscope as a function of the accuracy of aiming of the photoscope toward the target.



3,774,998

SPECTACLES BEING CONCURRENTLY USED AS BRACELETS, NECKLACES OR THE LIKE

Katsuko Kise, 35-10, Asakusabashi 1-chome, Taito-ku, Tokyo, Japan

Filed June 10, 1971, Ser. No. 151,822

Claims priority, application Japan, June 10, 1970, 45/56643

Int. Cl. G02c *11/02, 5/16*

U.S. Cl. 351—51 **6 Claims**

An article capable of being used both as spectacles and as an accessory which may be worn as a bracelet, necklace or the like. The article is formed of a horseshoe-shaped band of resilient material having spectacle lenses mounted at a central portion thereof and spaced apart a distance commensurate with the spacing of human eyes. Due to the configuration and resiliency of the material of the band, the article may be worn about the head as spectacles, or about the arm or the neck as a bracelet or necklace. The article may be ornamentally embellished by mounting decorative pieces thereupon or by forming the upper and lower edges of the horseshoe band in a waved shape.

3,774,999

ANALOG INFORMATION STORAGE AND RETRIEVAL SYSTEM

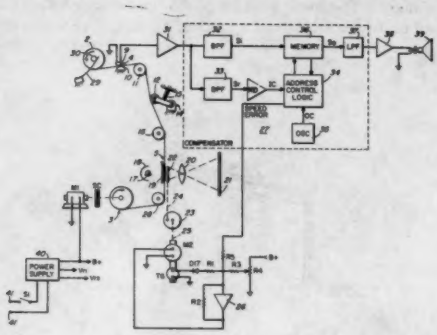
Andrew S. Ivestor, 23 Sullivan St., Charlestown, and William R. Wray, 46 Russell St., Brookline, both of Mass.

Filed Oct. 2, 1972, Ser. No. 294,469

Int. Cl. G03b *31/00*

U.S. Cl. 352—12 **32 Claims**

An information storage and retrieval system in which an information signal is recorded on a record medium simultaneously with a pilot reference signal. A reproducing system is provided in which samples of the recorded information signal are read from the record into an analog storage register at a rate determined by the reproduced pilot signal, and read out of the analog storage register at a fixed rate to compensate for differences in the speeds at which the information is stored on, and retrieved from, the record.



3,775,000

CLAW DEVICE

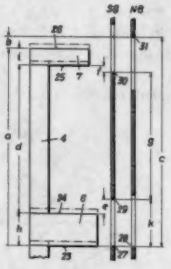
Erwin Krob, and Alfons Valoh, both of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, Vienna, Austria

Filed Jan. 12, 1972, Ser. No. 217,322

Claims priority, application Austria, Jan. 22, 1971, A 555

Int. Cl. G03b *41/00*

U.S. Cl. 352—79 **1 Claim**



In a strip handling apparatus of the type in which a plurality of strip types may be moved in a first transporting direction from a supply station to a take up station. Each of the strip types have equidistant perforation holes. The perforations of different strip types have different perforation pitches, each of the perforation holes having a forward and a rearward edge seen in the transporting direction, whereby with aligned forward edges of a first perforation hole of each of the different strip types, second respective perforation holes, which follow when seen in transporting direction only partly overlap each other. The apparatus comprises a shuttle mechanism located between the supply station and the take up station. A drive device is adapted to impart a first movement to the shuttle mechanism cyclically in and out of engagement with the perforation holes of the strips. The drive device is further adapted to impart a second movement to the shuttle mechanism cyclically and in synchronism with the first movement up and down parallelly with the path of movement of one of the strips to move the same in transporting direction. First and second

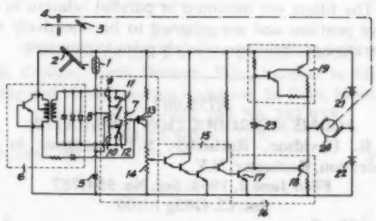
teeth on the shuttle mechanism are numbered, as when seen in the transporting direction. The teeth have forward and rearward surfaces opposite to each other, the surfaces of each of the teeth having a distance from each other. At least the second tooth is adapted to engage the forward edges of the perforation holes of the strips, when transported in the transporting direction, the distance between the forward and rearward surface of the second tooth corresponding to the space between the forward and rearward edges of the smallest perforation holes of one of the strip types to be used less a tolerance; the distance between the forward surface of the second tooth and the rearward surface of the first tooth increased by a further tolerance corresponds to the smallest existing distance on the strip types between the forward edge of the first perforation hole and the rearward edge of the second perforation hole; the distance of the rearward surface of the second tooth to the forward surface of the first tooth reduced by another tolerance corresponding to the largest existing distance on the strip types between the rearward edge of the first perforation hole and the forward edge of the second perforation hole.

3,775,001

AUTOMATIC APERTURE CONTROLS FOR MOTION PICTURE CAMERAS

Seinan Miyakawa, Tokyo, Japan, assignor to Asahi Kogaku Kagyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1972, Ser. No. 242,531
Claims priority, application Japan, Apr. 19, 1971, 46/30361
Int. Cl. G03b 7/08
U.S. Cl. 352—141 **4 Claims**



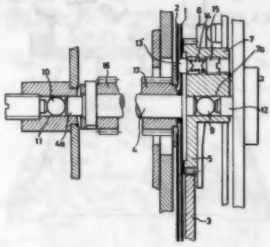
A motion picture camera having automatic controls for setting the aperture. The adjustable diaphragm of the camera is controlled by a reversible adjusting structure which can move in opposed directions one of which enlarges the aperture and the other of which reduces the aperture. The reversible adjusting structure is controlled by way of automatic controls which automatically achieve an aperture which will provide proper film exposure, the controls being regulated according to a number of factors one of which is the light at the object to be photographed. This latter factor is introduced into the controls by way of a light-detecting structure which responds to light at the object and which feeds to the controls a signal in the form of an arithmetic progression, the controls also being regulated according to the speed of the film which is exposed and the rate of film movement in the camera. In addition compensating devices are provided to compensate for the condition where the camera is running and for the condition where the camera is not running.

3,775,002

VARIABLE SECTOR SHUTTER DEVICE

Inao Moriyama, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1971, Ser. No. 168,859
Claims priority, application Japan, Aug. 7, 1970, 45/78565 (utility model); Aug. 7, 1970, 45/78566 (utility model)
Int. Cl. G03b 9/10
U.S. Cl. 352—216 **3 Claims**



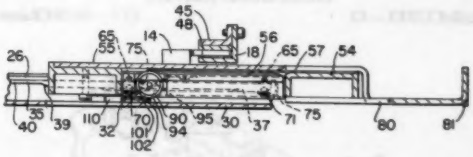
In a variable sector shutter device for a camera having a main sector and a sub-sector and mechanism for varying an opening angle defined by the main sector and the sub-sector. A differential mechanism is provided between the main sector and the sub-sector, including a mechanism for absorbing vibration provided between the main sector and the sub-sector to prevent irregular variation of the shutter speed.

3,775,003

MICROFORM POSITIONING CARRIER

Stephen B. Smith, Centerville, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 9, 1971, Ser. No. 197,036
Int. Cl. G03b 1/48, 21/11, 23/08
U.S. Cl. 353—23 **18 Claims**

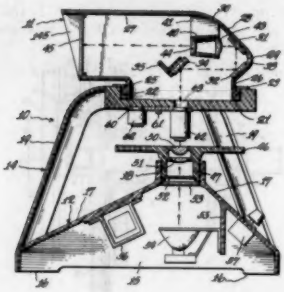


Mechanism for automatically placing into precise position a microform in a reader for reading the microform, and for automatically positioning the microform for removal from the reader. The microform carrier has a top plate spaced from the bottom plate, the plates being slidable as a unit for positioning of the microform. The carrier includes a pair of rotatable elements movable toward and away from the top plate, each of the elements having a peripheral surface thereon wherein the frictional effect is greater between the element surface and the microform than between the microform and the top plate. The surfaces of the rotatable elements are engageable with the microform at a predetermined point in the travel of the carrier for carrying the microform into a loading or reading position, and for ejecting the microform into an unloading position. Camming means are provided along the sides of the carrier support to raise the lower plate a slight amount and maintain the microform against the top plate in one position of the carrier, and to release the lower plate in another position of the carrier.

3,775,004
VIEW SCREEN MICROSCOPES

Bernard I. Parker, Warren, and Charles W. Caldwell, Cortland, both of Ohio, assignors to Parco Scientific Co., Warren, Ohio

Filed May 11, 1971, Ser. No. 142,157
Int. Cl. G02b *21/36*
U.S. Cl. 353—39 **6 Claims**



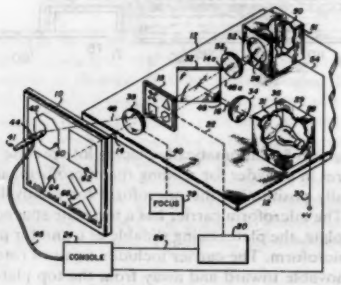
A new view screen microscope comprising a base structure supporting a stage plate and an optical system, and a hollow elbow-shaped housing mounted on the top of the base structure and supporting reflecting mirrors and a screen plate on which the magnified image of a specimen on the stage plate is displayed.

The housing is rotatably mounted on the base structure and the latter comprises a base and a bridge formed by a plurality of legs, the lower ends of which are connected to the base and the upper ends of which are joined to form a ledge to which the hollow housing is connected.

3,775,005
INTERACTIVE PHOTOGRAPHIC TRANSPARENCY DISPLAY DEVICE

Nicholas S. Szabo, Cupertino, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed Apr. 7, 1972, Ser. No. 242,155
Int. Cl. G09b *7/02, 7/06*
U.S. Cl. 353—42 **8 Claims**

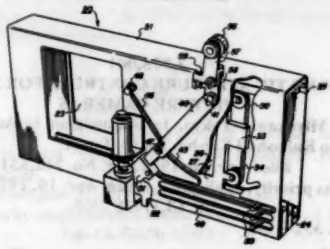


A device for displaying photographic transparencies which is capable of interaction with an operator employing a lasing-diode light pen. Two optical systems are provided which utilize filtering means for restricting light conduction within two mutually exclusive bands of wavelengths. One optical system conducts exclusively light having wavelengths which reside within the visual spectrum, and is used for projecting an image from a transparency onto a viewing screen. The second optical system conducts exclusively light having wavelengths within the infrared region, and is used for detecting operator response to an image displayed on the viewing screen. The transparencies are coated over a substantial area thereof with a light filtering material which will inhibit the transmission of infrared light, but will transmit light within the visual spectrum. A small area on the transparency, which corresponds to the correct response, is not coated with the light filtering material and will transmit all light. A photodetector is disposed within the second optical system for detecting light from the lasing-diode light pen. An electrical circuit is also provided between the light pen and the photodetector for improving the signal-to-noise ratio.

3,775,006
APPARATUS FOR OPTICAL COLOR SEPARATION IMAGING

William R. Hartman, Rochester, and Paul R. Lagonegro, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 830,282, June 4, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 181,892
Int. Cl. G03g *15/04*
U.S. Cl. 355—4 **6 Claims**

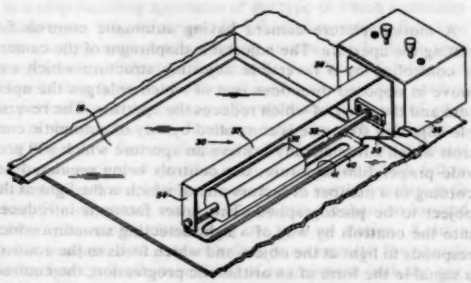


A multiple optical filter apparatus for controlled exposure of a photosensitive surface to establish a selected appropriate exposure. A color or neutral density filter sequentially is interposed into operative position during exposure to establish an exposure level of the photosensitive surface to various desired colors. The filters are mounted in parallel relation in an inoperative position and are adapted to be selectively moved into operative position immediately prior to exposure.

3,775,007
FORMS REPRODUCTION APPARATUS

James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 2, 1966, Ser. No. 554,757
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 **1 Claim**



An imprinter arranged to cooperate with a copying machine for producing copies of an original wherein each copy will bear variable information provided by the imprinter.

3,775,008

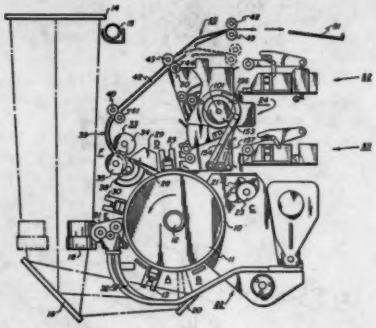
OPTICAL SCANNING APPARATUS

Robert A. Schaeffer; William T. White, both of Rochester, and Samuel D. Coriale, Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 859,929, Sept. 22, 1969. This application Aug. 25, 1971, Ser. No. 174,946

Int. Cl. G03b 27/16

U.S. Cl. 355—18 3 Claims



An optical system is disclosed herein for scanning a stationary original and placing a flowing light image thereof upon a moving light receiving member. The original is placed upon a light transmitting platen and successive incremental areas thereon scanned by means of a moving lamp and a moving lens which cooperate to focus a flowing image of the original on the moving surface in synchronous timed relation therewith. A shutter is positioned adjacent to the optical path and is arranged to move into a light blocking position to prevent exposure of the photosensitive surface when said surface is not in motion.

3,775,009

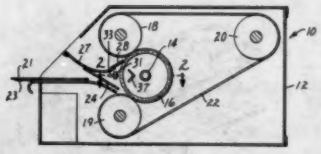
PHOTOCOPIER EXPOSURE CONTROL

John E. Collins, North Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 23, 1972, Ser. No. 282,973

Int. Cl. G03b 27/78

U.S. Cl. 355—83 9 Claims



An automatic exposure control for a reflex photocopier wherein a light-transmissive photosensitive film is moved through an exposure area in intimate contact with an original document to differentially desensitize the photosensitive film according to the differential reflectivity of the original document. The exposure control continuously collects a plurality of samples of light representative of the sum of the intensity of the light from the exposure light source and the intensity of the light reflected from the portion of the original document at the exposure area, each sample representing the sum over a portion of the exposure area. The samples of light are simultaneously transmitted, their intensities are averaged and the output from the exposure light source is controlled in response to the average intensity to maintain the intensity of the light which exposes the photosensitive film a predetermined constant.

3,775,010

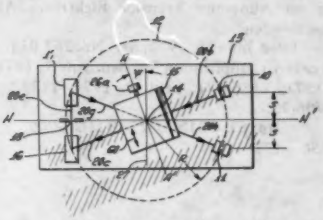
ASSYMMETRIC DOUBLE PASS GRATING MONOCHROMATOR

Vernon L. Chupp, West Covina, and Jack J. Duffield, Monrovia, both of Calif., assignors to Cary Instruments, Monrovia, Calif.

Filed Feb. 29, 1972, Ser. No. 230,434

Int. Cl. G01j 3/18

U.S. Cl. 356—101 7 Claims



The grating of an asymmetric, double pass, grating monochromator has an axis of rotation which extends at an angle Ψ relative to a normal to a plane H H'. That plane is normal to, and bisects, a line extending between the monochromator entrance and exit slits. The angle Ψ is characterized in that spectral overlap is substantially elmininated.

3,775,011

OPTICAL CONTROL MEANS

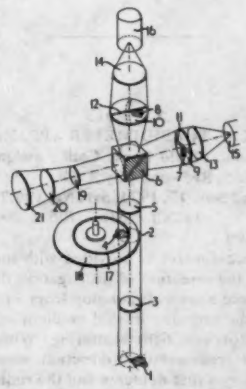
David Malcolm Marsh, Cambridge, England, assignor to T.I. (Group Services) Limited, Birmingham, England

Filed May 27, 1971, Ser. No. 147,595

Claims priority, application Great Britain, May 28, 1970, 25,658/70

Int. Cl. G01b 11/26

U.S. Cl. 356—172 7 Claims



Optical means for automatically controlling or monitoring the position of a relatively moving member such as a tool tip in an automatic machine tool. An image of the relatively moving member is projected onto a slit in an optical system and the slit is repeatedly scanned longitudinally. A photo-electric device such as a photomultiplier detects light passing through the slit

and responds to a fall in light passing through the slit caused by the presence of the moving member. The photo-electric device is connected to an electric circuit which produces a signal to halt movement of the member when the photo-electric device responds to a fall in light. There may be two orthogonal slits in the optical system onto each of which an image of the moving member is projected, a photo-electric device being provided behind each slit. Thus the moving member can be brought to a fixed datum point.

3,775,012

MEANS FOR DETERMINING DISTANCE

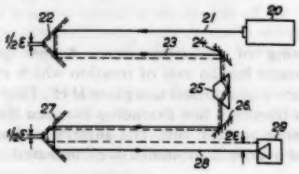
Bernt Ling, and Sven Karlsson, both of Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 28, 1972, Ser. No. 267,051

Claims priority, application Sweden, July 7, 1971, 8777/71; Sept. 8, 1971, 11354/71; Sept. 8, 1971, 11352/71; Dec. 8, 1971, 15706/71

Int. Cl. G01b *11/27*; **B21b** *37/00*

U.S. Cl. 356—172 **16 Claims**



In order to determine the distance between the rollers in a rolling mill, there is provided an optical transducer which includes a retro-reflector in a bore within each of the rollers. A laser beam is caused to impinge on one of the retro-reflectors and mirrors and prisms are provided for transmitting this beam to the other retro-reflector, from which it impinges on a detector which detects displacement of the beam and thus determines the distance between the rollers.

3,775,013

OPTICAL TURBIDIMETER APPARATUS

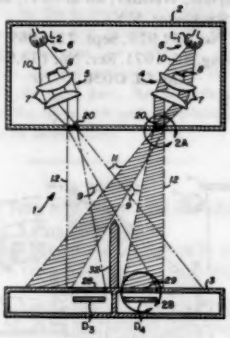
Romilly J. Simms, Menlo Park, Calif., assignor to Monitor Technology, Inc., Redwood City, Calif.

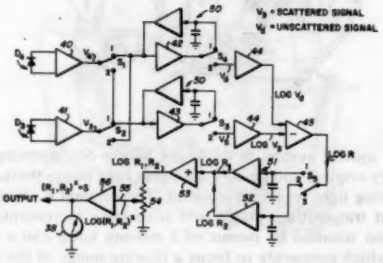
Filed Nov. 17, 1971, Ser. No. 199,700

Int. Cl. G01n *21/06*

U.S. Cl. 356—208 **13 Claims**

An optical turbidimeter is provided with means for selectively changing the direction of propagation through a medium of one or more beams of radiation from a radiation source for measuring the turbidity in said medium utilizing forward light scattering or side light scattering. With the radiation beams in a first predetermined direction, unscattered radiation is detected by a first detector and the radiation scattered by the medium is detected by a second detector. With the radiation beams then redirected, the roles of the detectors are reversed and the first detector detects the scattered radiation and the second detector detects the unscattered radiation. An electronic circuit coupled to the detectors generates a pair of ratios corresponding to the amount of scattered and unscattered radiation received by the detectors for each position of the radiation beams for generating a signal the magnitude of which is independent of the color of the medium, source and





detector drift and absorption and scattering at the source and detector windows. The circuitry also includes means for compensating for ambient radiation.

3,775,014

SCOURING ARTICLE

Jeffrey A. Rosborne, Upper Nyack, N.Y., assignor to Jerome J. Norris, Bronx, N.Y., part interest

Filed Apr. 14, 1972, Ser. No. 244,198

Int. Cl. A46b *5/04*; **A47k** *7/02*

U.S. Cl. 401—8 **6 Claims**

A scouring article with a window provided in its sponge-like surface for placement of an abrasive material.

The abrasive material is made to protrude from the window in the sponge-like pad by exerting finger pressure behind the abrasive member. A pocket is also rovided within the pad for holding and emitting soap, detergent, or other cleansing compositions.

3,775,015

BALL POINT PEN

Norimasa Tsunoda, and Tsutomu Saito, both of Yokohama, Japan

Filed Oct. 27, 1971, Ser. No. 193,020

Claims priority, application Japan, Nov. 6, 1970, 45/109547 (utility model); June 21, 1971, 46/43960 (utility model); Apr. 15, 1971, 28,337 (utility model)

Int. Cl. B43k *7/10*

U.S. Cl. 401—190 1 Claim

A pressure ball point pen which comprises a ball point means, a writing ink reservoir means, an air pressure chamber and an end closure means. A pressurized air is contained in the air pressure chamber by the end closure means adapted to be forced into the end of the air pressure chamber or by means of an outer sleeve adapted to sheathe the writing ink reservoir means.

3,775,016

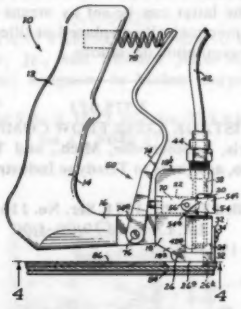
APPARATUS FOR APPLYING PUTTY

John R. Adams, late of Sutherlin, Oreg. (by United States National Bank of Oregon, executor)

Filed Nov. 29, 1971, Ser. No. 202,968

Int. Cl. A47l *13/30*

U.S. Cl. 401—263 2 Claims



Hand-held traweling tool for applying putty to a workpiece, including a handle and a head assembly secured to the handle which has a cavity therein opening to the bottom of the tool. One end of a compressible tube through which putty may be supplied to the cavity opens into the cavity. A movable clamp member adjacent the cavity is yieldably biased against a side of the tube to compress it to stem the flow of putty therethrough to the cavity. A trigger lever on the handle is operable to remove the biasing force to permit putty flow. A strike off plate in the head assembly adjacent the cavity produces a desired surface contour to putty dispensed through the cavity onto a workpiece.

3,775,017

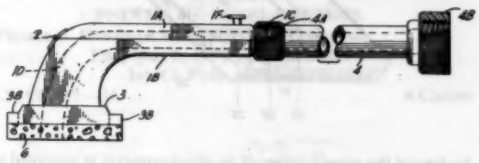
AUTOMOBILE HAND SPRAY WASHERS

Frederick Lonnie Jerry, Detroit, Mich.

Filed May 11, 1972, Ser. No. 252,209

Int. Cl. A47l *13/23*

U.S. Cl. 401—266 2 Claims



A sponge type washer having hinged sections forming a hollow handle with means for attachment to a pipe sleeved thereover or, alternatively, to receive a nozzle in the hollow handle. The sponge cleaning element has a passageway therethrough that communicates with the hollow handle for conducting liquid to the work.

3,775,018

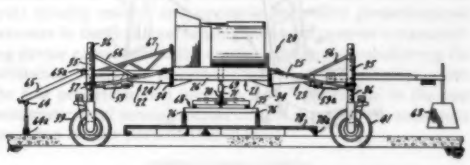
ROAD TEXTURING MACHINE

Robert M. Barton, Oklahoma City, Okla., assignor to CMI Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 858,070, Sept. 15, 1969. This application July 22, 1971, Ser. No. 165,214

Int. Cl. E01c *23/16*

U.S. Cl. 401—93 17 Claims



A self-propelled and automatically steered machine for selectively imparting longitudinal and transverse grooves or antiskid marks in green concrete.

3,775,019

DYNAMIC SOIL COMPACTING MACHINE

Fritz Konig, Wuppertal-Voh-Winkel, and Hans-Georg Wascewski, Mettmann, both of Germany, assignors to Losenhausen Maschinenbau AG., Dusseldorf-Grafenberg, Germany

Filed Apr. 12, 1971, Ser. No. 133,260

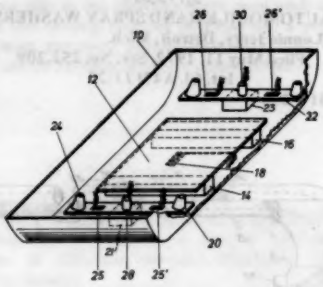
Claims priority, application Germany, Apr. 16, 1970, P 20 18 219.8

Int. Cl. E01c *19/40*

U.S. Cl. 404—133 22 Claims

A first strain gauge fixed to a vibration generator supporting plate, second strain gauges mounted on cross members of a vibrator plate and two accelerometers with vertical recording orientation in a dynamic soil compacting machine provide signals, components of which are added to represent the impact force between the vibrator plate and the soil. Peak values of said added signals are stored in a register. By differentiating

the increase in register content a set of pulses from a differentiating element is formed. Either a preset register content or a preset number of pulses is used to trigger the advance motion of the machine and to cancel the register. In a special em-



bodiment the seismic mass of an accelerometer is arranged to form the yoke of an electromagnet the flux of which is adjustable within two limiting values, the first preventing insignificant acceleration from being stored and the second representing the threshold value for triggering.

3,775,020

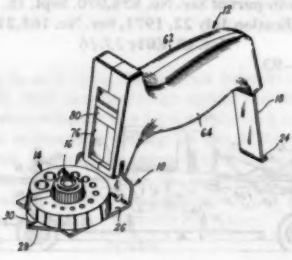
DRILL GUIDE

Carl Christian Stoutenberg, Avon, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 31, 1972, Ser. No. 222,162

Int. Cl. B23b *49/00*

U.S. Cl. 408—115 **14 Claims**



A drill guide includes a frame member having a shoe for seating upon the surface of a workpiece to be drilled and a turntable member rotatably seated upon the shoe and having a multiplicity of drill guide apertures disposed radially outwardly from its axis of rotation. The drill guide apertures are adapted to provide radial support for drill bits appropriately sized with respect thereto and thereby permit drilling substantially perpendicularly to the front surface of the workpiece. The drill guide shoe desirably includes a pointer and cooperating means for alignment of the drill guide upon the workpiece and it may include a handle or housing which is adapted to store drill bits and the like.

3,775,021

MACHINE TOOL WITH OUTBOARD SUPPORT FOR DRILL

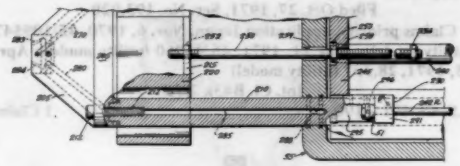
Bob J. Langebach, Athens, Ohio, assignor to Alex Corporation, New York, N.Y.

Division of Ser. No. 752,200, Aug. 13, 1968, Pat. No. 3,584,524. This application July 14, 1970, Ser. No. 54,870

Int. Cl. B23b *41/02, 47/32, 49/00*

U.S. Cl. 408—234 **2 Claims**

An automatic drilling machine is afforded in which the drill is automatically retracted when excessive resistance is encountered, and upon retraction may be automatically cleaned,



lubricated and cooled. At no time is more than one-half the length of the drill unsupported

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3,775,022

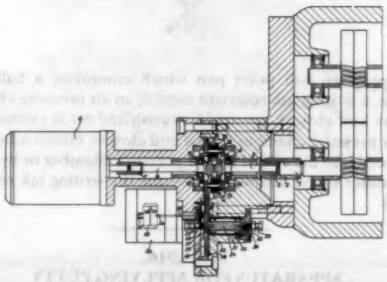
PRESSURE OPERATED DEVICE FOR A PRESSURE OPERATED SERVO-TURBINE

Alois Moosmann, 11, Muttergartenweg, Stuttgart-Birkach, Germany

Filed Mar. 3, 1972, Ser. No. 231,590

Int. Cl. F01d *1/24*

U.S. Cl. 415—61 **8 Claims**



A pressure operated device for a pressure operated servo-turbine actuating a screw drive spindle or the like for driving a part of a machine tool. In the device the means of diverting a pressure medium jet, acting on reversible servo-turbine blades which can turn in opposite directions, can be adjusted by pressure medium pulses from a jet nozzle control device. The control vane of the latter can be set by means of a setting part which can be mechanically displaced or tilted, in accordance with setting or regulation deviations.

3,775,023

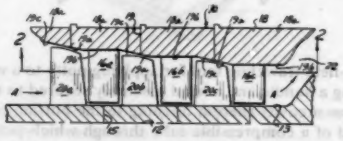
MULTISTAGE AXIAL FLOW COMPRESSOR

James V. Davis, Lambertville, Mich., and Thomas J. Ivsan, Toledo, Ohio, assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 17, 1971, Ser. No. 116,010

Int. Cl. F04d *19/00, 3/00*

U.S. Cl. 415—199 R **1 Claim**



A multistage axial flow compressor with stacked stages in an axial direction, each stage including a rotor and a stator. The

stages include vanes of identical vane geometry throughout the stator stages and the blades are of identical blade geometry throughout the several rotor stages. The blade and vane heights decrease from stage to stage in the direction of exiting fluid flow from the compressor. A constant hub diameter is maintained throughout the several rotor stages.

3,775,024

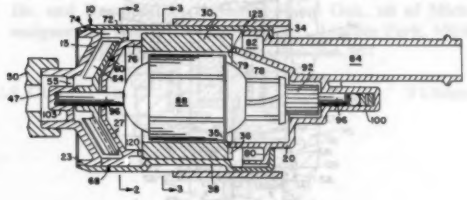
SUBMERSIBLE FUEL PUMP

Ralph E. Ulm; Claude F. Phillips; Michael J. Sullivan; Larry C. Collins, and William Russell Parrent, all of Fairfield, Ill., assignors to Airtex Products, Division of United Industrial Syndicate, New York, N.Y.

Division of Ser. No. 37,951, May 20, 1970, Pat. No. 3,666,381. This application Feb. 10, 1972, Ser. No. 225,330

Int. Cl. F01d *11/00*

U.S. Cl. 415—211 **3 Claims**



A rotary electric fuel pump using a permanent magnet motor is constructed of parts having a simple geometric pattern for mass production by sheet metal stamping and plastic molding. The construction provides for housing a cylindrical magnet stator for a motor field and a high-speed armature. The fuel medium being pumped flows over the magnet effecting cooling, with some diverting of flow through the armature for cooling. A further feature resides in the construction of an impeller having flow passage to the stator slots phased in such a manner that peak flow pressure at the slots is evened out around the impeller. Thus, the impeller vane spacing is related to that of the stator slots that only one flow pressure peak occurs at a time, and such peaks occur sequentually at widely spaced points around the rotary axis. This minimizes electric current peaks and brush sparking as well as bearing wear. The construction is fully sealed for submerged use in fuel tanks.

3,775,025

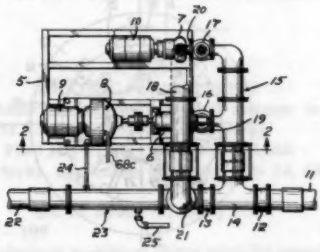
CONSTANT PRESSURE PUMPING UNIT

Denis L. Maher, Jr., and Edward John Maher, both of Woburn, Mass., assignors to Maher Corporation, North Reading, Mass.

Filed Feb. 2, 1972, Ser. No. 222,824

Int. Cl. F04b *41/06*

U.S. Cl. 417—7 **13 Claims**



A pumping unit is disclosed for use with water delivery systems where the demand is variable. The unit has first and second pumps with the drive of the first pump variable and operable to provide a constant pressure at any speed while the drive of the second pump provides a constant speed therefor. The drive of the first pump is responsive to the pressure established by it in the system so that its speed varies with the demand as measured by said pressure. A control for the drives includes control circuitry having a switch responsive to pressure in the system established by the unit and having high and low pressure limits and placing the second pump in service only when a predetermined high pressure cannot be maintained by the first pump.

3,775,026

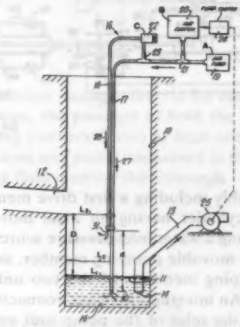
PNEUMATIC LEVEL CONTROL

Winston G. Hewlings, Montreal, Quebec, Canada

Filed May 3, 1972, Ser. No. 249,917

Int. Cl. F04b *49/02, 49/06*

U.S. Cl. 417—36 **4 Claims**



A pneumatic level control system for controlling the level of a flowable substance in a contained area. The system comprises a level control means having a first pneumatic level sensing means. Switching means are associated with the first level sensing means and operable by a first predetermined pressure in the first level sensing means to operate a transporting device connected to the contained area for transferring the substance. A second pneumatic level sensing means prevents the first predetermined pressure from building up in the first pneumatic level sensing means until the level of the substance reaches a further predetermined level.

3,775,027

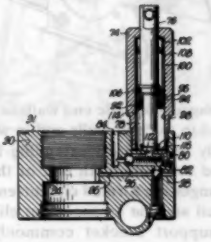
TWO-SPEED PUMP

Roger L. Craft, St. Joseph, Mo., assignor to Gray Manufacturing Company, Inc., St. Joseph, Mo.

Filed Oct. 1, 1971, Ser. No. 185,528

Int. Cl. F04b *19/00*

U.S. Cl. 417—214 **16 Claims**



A stepped displacement fluid pump having a plurality of piston members reciprocable individually or in common

within a single fluid chamber to displace fluid from the chamber at different rates proportional to the sum of the exposed surface areas of those piston members reciprocating in common. Coupling means carried on the piston members selectively interconnect and disconnect the piston members in different stages of operation of the device in response either to positioning the piston members at predetermined locations relative to one another or in response to the pressure of fluid in the chamber.

3,775,028

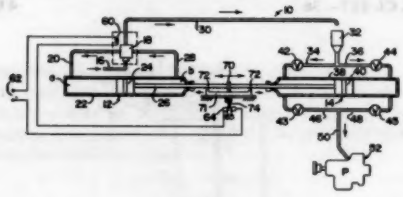
PUMP UNIT FOR WATER SUPPLY

Charles H. Davis, Oberlin, Ohio

Filed Oct. 12, 1971, Ser. No. 188,089

Int. Cl. F04b *17/00*

U.S. Cl. 417—267 **4 Claims**



A pump assembly including a first drive member unit such as a hydraulic cylinder having an axial movable pumping member and having a water inlet pressure source, a pump unit having an axially movable pumping member, and means connecting the pumping members of the two units together to drive the pump. An interrupted means connects the output of the first unit to the inlet of the pump unit and means controlled by movement of the connecting means control input of water to the first unit whereby an independent supply of water to the pump is provided and it can, for example, supply flushing water to packing seals of sewage pumps.

3,775,029

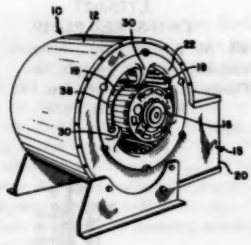
DIRECT DRIVEN BLOWER

James R. Ranz, Wilmington, Ohio, assignor to Lau Incorporated, Dayton, Ohio

Filed Feb. 9, 1972, Ser. No. 224,761

Int. Cl. F04b *35/04*; **F04d** *29/44*

U.S. Cl. 417—353 **11 Claims**



Direct driven blowers include end walls in which the venturi opening is formed in the end walls and in which the motor is supported directly on inwardly-extending fingers or flanges which are formed integrally with one of the end walls. The motor support flanges are formed concurrently with the forming of the end wall and the arrangement eliminates the usual separate motor-support bracket commonly used in direct drive blower arrangements. Embodiments of the invention include vibration isolation between the motor and the end wall flanges and between the end wall and the remaining housing structure. In one embodiment, the blower housing end wall is formed in two parts including an inner removable part defining the venturi opening and supporting the blower motor, and an outer part, these parts being formed from a single blank.

3,775,030

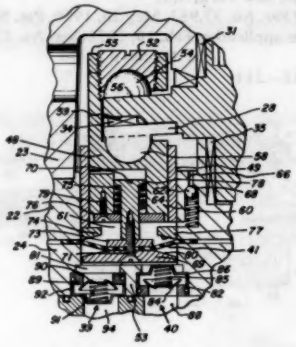
DIAPHRAGM PUMP

William F. Wanner, Edina, Minn., assignor to Wanner Engineering Inc., Hopkins, Minn.

Filed Dec. 1, 1971, Ser. No. 203,562

Int. Cl. F04b *9/10, 35/02*

U.S. Cl. 417—388 **9 Claims**



An improved high pressure diaphragm pump comprising an improved pumping unit including a pumping chamber, a transfer chamber, a reciprocating piston means defining one end of the transfer chamber, a diaphragm defining the other end of the transfer chamber bias means urging the diaphragm toward the piston, and a stop for limiting the movement of the diaphragm toward the piston; and an improved pressure control and unloader valve incorporating a floating check valve which is responsive to a gradual restriction in the discharge line and is also responsive to the shock wave formed as a result of a sudden shut-off of the discharge line.

3,775,031

ROTARY FLUID PRESSURE DEVICE

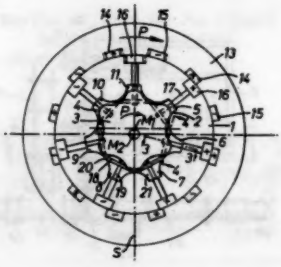
Gunnar Lyshoj Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed June 14, 1972, Ser. No. 262,589

Claims priority, application Germany, May 14, 1971, P 21 24 006.2

Int. Cl. F01c *1/02*; **F03c** *3/00*; **F04c** *1/02*

U.S. Cl. 418—61 **12 Claims**



The invention relates to fluid pressure motors and pumps of the type having a gerotor displacement mechanism. The ro-

tary type valving for gerotor mechanisms has first and second sets of alternately arranged ports which have sequential fluid communication with ports of stationary passage which are connected to the displacement chambers. Optimum efficiency normally requires that these ports be formed and positioned with great precision. Auxiliary passages associated with the teeth of the gerotor mechanism itself, and which connect adjacent displacement chambers, effects a precise internal distribution of fluid so that only a gross of coarse fluid distribution is required of the valve ports and the fine or delicate distribution needed for optimum efficiency is performed by the auxiliary passages.

3,775,032

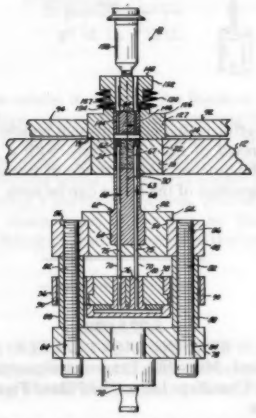
POWDER COMPACTING APPARATUS

Joseph E. Smith, Birmingham; George D. DeTroyer, Grosse Ile, and Raymond P. DeSantis, Royal Oak, all of Mich., assignors to Wolverine-Pentronix Inc., Lincoln Park, Mich.

Filed July 27, 1971, Ser. No. 166,507

Int. Cl. B30b *11/02*

U.S. Cl. 425—78 **9 Claims**



A powder compacting apparatus comprising a punch and die assembly including a die plate with at least one die cavity therein and at least one lower punch for reciprocal movement into the die cavity to compact powdered material therein. A work station positioner transversely movable across the upper surface of the die plate has an upper punch adapted to be aligned with the die cavity and moved in timed relationship with the lower punch such that the powdered material is compressed between the two punches to form a compacted article.

3,775,033

HEATING PLATEN PRESS

Heinrich Pfeiffer, Eppingen, Germany, assignor to Dieffenbacher G.M.B.H., Eppingen/Bade, Germany

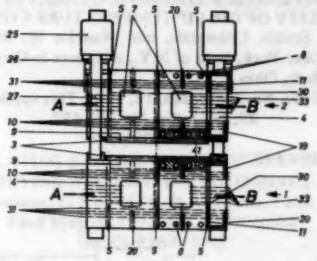
Filed July 21, 1971, Ser. No. 188,666

Claims priority, application Germany, July 24, 1970, P 20 36 911.3

Int. Cl. B30b *7/02*; B29j *5/00*

U.S. Cl. 425—109 **8 Claims**

Heatable single or multilevel platen press for manufacturing wood and fiber composition panels or the like includes a stationary base structure and a displaceable structure, each of the structures being composed of a plurality of individual bridge members and rib members interconnecting the bridge members and forming conjointly therewith a grid extending over the entire width of the press, press platens loosely mounted on the grid at the workpiece-side therof, the rib members having fluid circulation passages therein for equalizing longitudinal thermal stresses, and the bridge members having fluid circulation passages therein for equalizing transverse thermal tensions, the passages of both the rib and the bridge members being connected into at least one close circulatory loop, and at least one pump connected in the circulatory loop for circulating fluid medium therethrough.



3,775,034

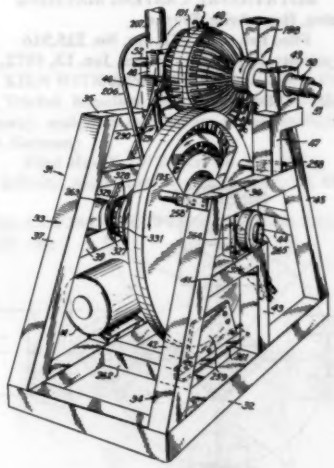
SEED CONTAINING PELLET FORMING EQUIPMENT

Philip B. Knapp, Lynbrook, N.Y., assignor to Aptek Industries, Inc., Lynbrook, N.Y.

Division of Ser. No. 855,289, Sept. 4, 1969, Pat. No. 3,640,428. This application July 21, 1971, Ser. No. 164,748

Int. Cl. A01c *1/06*; B30b *11/12*

U.S. Cl. 425—128 **4 Claims**



A seed containing pellet forming equipment for automatically removing a single seed at a time from a mass of seeds and depositing such seed into a mold cavity which previously had been loaded with a charge of pellet forming material and after

the seed is deposited onto such charge, loading a second charge of such material into the cavity and then compressing the contents of the cavity to form such pellet.

3,775,035

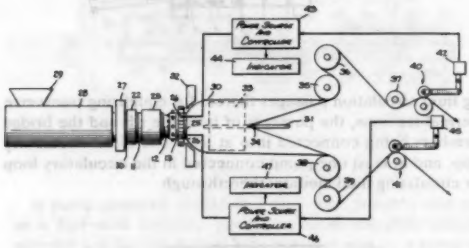
FOAM PLASTIC EXTRUSION APPARATUS WITH PLURALITY OF DIE LIP TEMPERATURE CONTROLS

Victor E. Scotto, Uniondale, and Maurice W. Blackwelder, South, Deer Park, both of N.Y., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 2,005, Jan. 12, 1970. This application May 25, 1972, Ser. No. 256,692

Int. Cl. B29f *3/08*

U.S. Cl. 425—141 **6 Claims**



Caliper in the cross direction in webs of extruded foamed plastic produced by longitudinal slitting of a tubular extrusion is controlled by differentially heating the extrusion die circumferentially about its axis. This can be accomplished by locating a plurality of independently controllable heaters around the die.

3,775,036

ROTATIONAL CASTING MACHINE

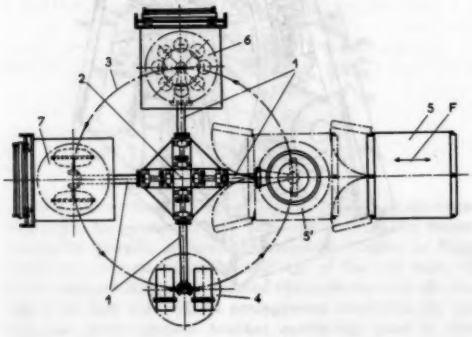
Guy Winning, Hegenheim, France

Filed Feb. 14, 1972, Ser. No. 225,916

Claims priority, application France, Jan. 13, 1972, 7201648

Int. Cl. B29h *3/00*

U.S. Cl. 425—174.4 **3 Claims**



The disclosure is of a rotational casting machine capable of functioning continuously, comprising a rotary assemblage with four or more arms supporting moulds or mould-rotating devices, a charging station, a heating station, and at least two cooling stations.

3,775,037

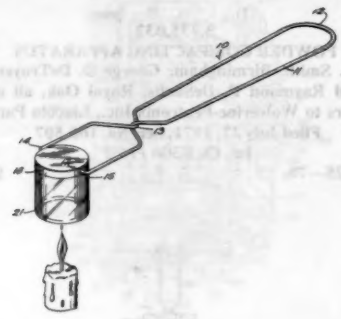
CANDLE SNUFFER

Andrew Sande, 1320 Grandview Ave., Oconomowoc, Wis.

Filed Sept. 11, 1972, Ser. No. 287,990

Int. Cl. F23q *25/00*

U.S. Cl. 431—144 **4 Claims**



A candle snuffer with a conventional handle and a cylindrical shroud formed of rigid materials, with a portion of said shroud from the bottom thereof made of transparent material whereby the terminus of the flame can be seen.

3,775,038

BURNING LIQUID FUELS

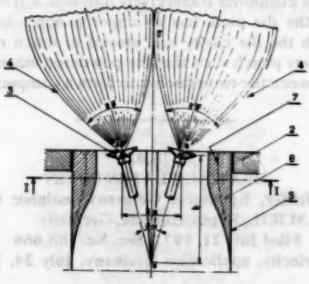
Marcel T. Pillard, Marseille, France, assignor to L. Entreprise Generals De Chauffage Industrial Pillard Freres & Cie, Marseille, France

Filed Jan. 10, 1972, Ser. No. 216,364

Claims priority, application France, Jan. 13, 1971, 7102254

Int. Cl. F23c *5/08*

U.S. Cl. 431—175 **11 Claims**



A system for burning liquid fuels comprising a plurality of burners disposed in a single opening and in a single distributor for air for combustion, the said burners diverging towards the interior of the furnace, their mutual orientations being such that the individual flames penetrate one another slightly or are

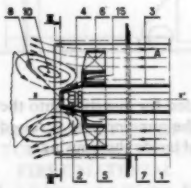
tangential to one another, and the air distributor comprises longitudinally profiled air deflectors which define a contour inside the air distributor formed by arcs of a circle centred on the burner axes.

3,775,039

BURNERS FOR LIQUID OR GASEOUS FUELS

Marcel T. Pillard, Marseille, France, assignor to Enterprise Generale De Chauffage Industrial Pillard Freres et Cie, Marseille, France

Filed Jan. 12, 1972, Ser. No. 217,097
Claims priority, application France, Jan. 22, 1971, 7103504
Int. Cl. F23m *9/08*
U.S. Cl. 431—350 10 Claims



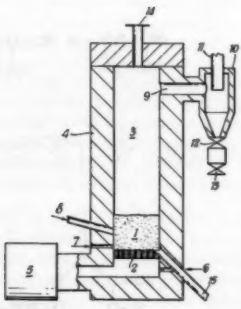
This invention relates to a burner for liquid or gaseous fuels composed of three coaxial ducts, the intermediate duct and the outer duct defining an annular space for distributing the combustion-supporting air, which burner comprises fins placed in said annular space, behind the nozzle of the burner, and means forming a perforated screen, placed in said intermediate space, downstream of the fins, so that an eddy of burning fluid is formed about the nozzle of the burner.

3,775,040

HEAT TREATMENT OF PARTICULATE MATERIALS

Edgar Colin Vollans, St. Austell, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed June 29, 1971, Ser. No. 157,991
Claims priority, application Great Britain, July 1, 1970, 32,025/70
Int. Cl. B01d *3/00*
U.S. Cl. 432—15 10 Claims



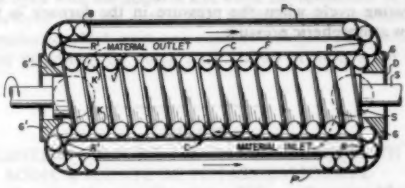
A particulate material is heat treated, e.g. calcined, by being passed through a fluidised bed comprising particles of an inert refractory material. Throughout the period in which the particulate material is passing through the fluidised bed, the fluidised bed contains a major proportion by weight of the inert refractory material. The size, shape and density of the particles of inert refractory material and the velocity of the fluidising gas are such that the particles of inert refractory material are retained in the fluidised bed while the particulate material being heat treated is carried through the fluidised bed. The particulate material is retained within the fluidised bed for a time sufficient to effect the desired heat treatment thereof.

3,775,041

RECIRCULATING BALL HEAT TRANSFER SYSTEM FOR DRYING AND HEATING MATERIALS

Horace J. Buttner, 117 W. 155th St., Gardena, Calif.

Filed May 10, 1972, Ser. No. 252,080
Int. Cl. F28d *19/02*
U.S. Cl. 432—27 29 Claims



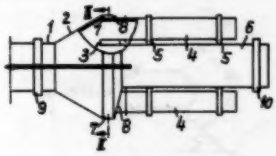
The helical screw(s) of a screw-type heat transfer device are efficiently cleaned by engaging the volute passages of a helical screw with recirculating balls which pass cooperatively along a longitudinal guide channel and at least partly within the volute passages of the helical screw to effect cleaning of the device.

3,775,042

ROTARY KILN WITH A PLURALITY OF COOLING PIPES

Wolfgang Triebel, Kapellen, and Manfred Durr, Moers, both of Germany, assignors to Polysius Aktiengesellschaft, Neubeckum, Germany

Filed Mar. 8, 1972, Ser. No. 232,685
Claims priority, application Germany, Mar. 10, 1971, P 21 11 403.4
Int. Cl. F28d *11/08*; F25b *29/00*; F27b *7/00*
U.S. Cl. 432—80 8 Claims



A rotary kiln construction, in which the kiln has one end connected to a funnel-shaped member the wider end of which is provided with a closure wall having a plurality of annularly

arranged bores in which one end of a plurality of cooling pipes is mounted, the cooling pipes extending from the funnel-shaped member either in a direction away from the rotary kiln on in a direction toward the rotary kiln and around the same.

3,775,043

MEANS IN FURNACES FOR VACUUM-PRESSURE-SINTERING

Paul Johansson; Torstein Landa, both of Vasteras, and Hans Larker, Robertsfors, all of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 13, 1972, Ser. No. 233,925

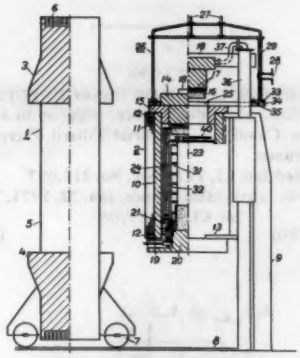
Claims priority, application Sweden, Mar. 15, 1971, 3276/71

Int. Cl. F27b *3/18*

U.S. Cl. 432—205 **15 Claims**

A furnace for vacuum-pressure-sintering has a furnace chamber which is enclosed in and insulated from a surrounding pressure chamber. The pressure chamber includes a bottom projecting into it at the lower end and has at the upper end a charging opening and a lid projecting into the charging opening. A housing can be applied over the charging opening and connected to a vacuum pump during the part of the operating cycle when the pressure in the furnace is to be below atmospheric pressure.

The lid is formed of an outer annular part and an inner part, separate from each other, the outer annular part remaining in position when the inner part is removed. A heat radiation protection ring is provided for insertion into the opening into the annular part when the annular part is raised. A lifting device for the lid is provided inside the housing.



CHEMICAL

3,775,044
THIOCARBAMIDE DIOXIDES, COMPLEXING AGENTS AND OXIDATION DYES AND HAIR DYEING THEREWITH

Dieter Schrader, Dusseldorf-Holthausen, Germany, assignor to Therachemie Chemisch Therapeutische Gesellschaft m.b.H., Dusseldorf, Germany

Filed Apr. 17, 1972, Ser. No. 244,862
Int. Cl. D06p *1/32*
U.S. Cl. 8—11 **15 Claims**

In a process for dyeing human hair by means of an aqueous composition containing oxidation dyes, the improvement which comprises including in said composition a thiocarbamide dioxide in combination with a complexing agent.

3,775,045
PROCESS FOR THE PRODUCTION OF MULTI-COLOUR EFFECTS ON NATURAL AND SYNTHETIC POLYAMIDE FIBRE MATERIAL

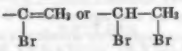
Arthur Buehler, Rheinfelden, and Walter Mosimann, Therwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed June 8, 1971, Ser. No. 150,930
Claims priority, application Switzerland, June 11, 1970, 8809/70
Int. Cl. D06p *3/04, 3/24*
U.S. Cl. 8—15 **32 Claims**

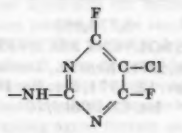
A dyeing process for the production of multi-colour effects on natural and synthetic polyamide fibre material, as well as the multi-coloured fibre material produced thereby, which process consists of pretreating the fibre material with an aqueous solution of at least one colourless, fibre-reactive compound and optionally with one levelling agent having affinity for the fibre material, combining the treated material with untreated fibre material and/or with at least one fibre material pretreated in a different manner, and dyeing the combined fibre material with a dyestuff having affinity for the fibre material or with a mixture of such dyestuffs, said process being characterized in that the colourless, fibre-reactive compound contains per molecule thereof at least one group of the Formula I

$$-NH-CO-R \qquad (I)$$

wherein R represents either



or of Formula II



(II)

bound to an aromatic carbon atom, said fibre-reactive compound serving as reserving agent.

3,775,046
PROCESS FOR PRODUCING VARICOLORED FABRICS VIA THE SELECTIVE DYEING OF CELLULOSIC FABRICS WITH DIFFERENT DYE TYPES

Robert J. Harper, Jr., Metairie; Eugene J. Blanchard, New Orleans; John T. Lofton, and Gloria A. Gautreaux, both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 5, 1971, Ser. No. 196,214
Int. Cl. D06p *5/12*
U.S. Cl. 8—17 **2 Claims**

A process has been developed for the selective dyeing of cellulosic fabrics with different types of dyes. This process consists of the application of a coating mixture to a fabric either entirely on one side, in a selected area, as a stripe, or in another design. The design may also be painted or printed on the fabric. The coating solution contains either a polymer or polymer and crosslinking agent. The fabric is then dyed with a disperse dye and a cotton dye. The polymer treated part of the fabric is dyed with the disperse dye while the remainder of the fabric is dyed with the cotton dye. By this technique, fabrics were produced which were one color on one side and another color on the other, or which have stripes or designs on the fabric.

3,775,047
OXIDIZING SULFUR DYES ON CELLULOSE WITH SODIUM IODATE OR POTASSIUM IODATE

Charles Douglas Weston, Charlotte, N.C., assignor to Martin Marietta Corporation, New York, N.Y.

Filed July 6, 1971, Ser. No. 160,174
Int. Cl. C09b *49/00, 49/10*; **D06p** *1/30*
U.S. Cl. 8—37 **1 Claim**

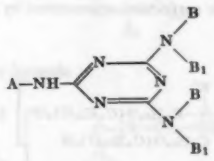
Method for oxidizing sulfur dyes on natural or regenerated cellulose textile fibers comprising contacting said fibers having thereon at least one sulfur dye in reduced form with an aqueous, acid, oxidizing solution comprising water, acetic acid and XIO_3, wherein X is Na or K.

3,775,048
PROCESS FOR THE CONTINUOUS DYEING OF POLYESTER FIBERS WITH ANTHRAQUINONE DYESTUFFS

Rutger Neeff, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 7, 1971, Ser. No. 132,169
Claims priority, application Germany, Apr. 13, 1970, P 20 17 504.6
Int. Cl. D06p *1/20*
U.S. Cl. 8—39 **12 Claims**

Process for the continuous dyeing of synthetic fibre materials from organic solvents wherein the fiber materials are impregnated with solutions of anthraquinone dyestuffs of the formula



in which A, B and B_1 have the meaning given below, in organic water-immiscible solvents and are subsequently subjected to a heat treatment. There are obtained without originating waste waters, dyeings with excellent fastness properties and high dyestuff yields.

3,775,049

CONTINUOUS DYEING OF POLYESTER FIBRES WITH AZO DYESTUFFS SOLUBLE IN WATER-IMMIRSCIBLE HALOGENATED HYDROCARBONS

Gerhard Wolfrum, Opladen; Rutger Neeff, and Winfried Kruckenberg, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

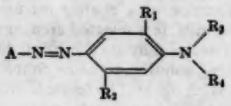
Filed Dec. 18, 1970, Ser. No. 99,719

Claims priority, application Germany, Jan. 2, 1970, P 20 00 131.4

Int. Cl. D06p *1/18*; **C09b** *29/06*

U.S. Cl. 8—41 C **15 Claims**

Process for the continuous dyeing of synthetic fibre materials from organic solvents wherein the fibre materials are impregnated with dyeing liquors containing azo dyestuffs which are soluble in organic solvents and correspond to the formula



in which A, R_1, R_2, R_3 and R_4 have the meaning given in the disclosure and are subsequently subjected to a heat treatment.

3,775,050

PROCESS FOR FACILITATING POSTPONEMENT OF FIXATION USING REACTIVE CARBONATE DYESTUFFS

Russel M. Kullman, Metairie, and Robert M. Reinhardt, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 751,697, Aug. 6, 1968, abandoned. This application May 13, 1971, Ser. No. 143,176

Int. Cl. C09b *62/80, 62/82*

U.S. Cl. 8—41 R **9 Claims**

A new class of dyestuffs that contains a carbamate structure to which there is attached an N-hydroxymethyl group has been prepared. These new dyestuffs were prepared through combination of certain dyestuffs with the hydroxyl group of hydroxyalkyl carbamates. Methylolation of the carbamate moiety renders the dyestuffs reactive under acidic conditions to cellulosic and other textile materials containing reactive hydrogens.

3,775,051

SURFACTANTS FOR SOLVENT/WATER SYSTEMS AND TEXTILE TREATING COMPOSITIONS

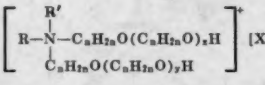
Kenneth W. Graff, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

Division of Ser. No. 839,621, July 7, 1969, Pat. No. 3,658,717. This application Nov. 3, 1971, Ser. No. 195,462

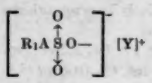
Int. Cl. D06m *13/00, 13/34*; **B01f** *17/00*

U.S. Cl. 8—115.6 **11 Claims**

Disclosed are (a) novel surfactant compositions comprising a blend of a cationic surfactant represented by the formula

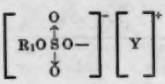


wherein n represents an integer from 2 to 4 x represents a number from 0 to 100, y represents a number from 0 to 100, R represents a radical selected from the group consisting of alkyl and alkenyl radicals containing from 6 to 22 carbon atoms, R' represents a radical selected from the group consisting of alkyl and hydroxyalkyl radicals containing from one to five carbon atoms, and X represents an anion, and an anionic surfactant characterized by a generalized formula selected from the group consisting of the following generalized formulae wherein identical symbols have identical signification:



and

(2)



wherein R_1 represents a radical selected from the group consisting of alkyl and alkenyl radicals containing from six to 22 carbon atoms, A represents an arylene radical, and Y represents a cation; (b) a fluid carrier composition for the treatment and processing of textile materials which comprise water, an organic liquid, and said novel surfactant composition; and (c) textile treating compositions comprising said fluid carrier composition and a textile treating agent. Also disclosed is a textile treating composition comprising a blend of a textile softening agent and said novel surfactant composition.

3,775,052

DETERGENT COMPOSITIONS FOR CARPETS AND THE LIKE

Nicolaas A. I. Van Paassen, Rijswijk, Netherlands, assignor to Chem-y, Fabriek Van Chemische Produkten N.V., Bodegraven, Netherlands

Filed Nov. 5, 1971, Ser. No. 196,215

Claims priority, application Great Britain, Nov. 6, 1970, 52,959/70

Int. Cl. D06f

U.S. Cl. 8—137 **10 Claims**

A carpet shampoo containing as essential ingredient a mixture of

a. 10–70 % by weight of a detergent of the formula

$$[RO—(C_2H_4O)_n(CH_2)_xCOO]_mM$$

wherein R is hydrophobic hydrocarbon residue of 8 to 20 carbon atoms which may contain one or more hydrophobic oxyalkylene units, n has an average value of 0–10, x is 1 or 2, m is 1 or 2, and M is a monovalent or divalent cation; and

b. 90–30 % by weight of a finely divided adsorbent solid, is provided. This shampoo can be prepared in the form of an aqueous concentrate of a solids content of e.g. 20–50 % and this concentrate can be diluted to the use concentration of 1–30 %. The shampoo can also be prepared conveniently in the form of an aerosol.

3,775,053

CONTINUOUS SOLVENT RECOVERY PROCESS

Dorothea R. Wisdom, 23017 Kent St., Torrance, Calif.

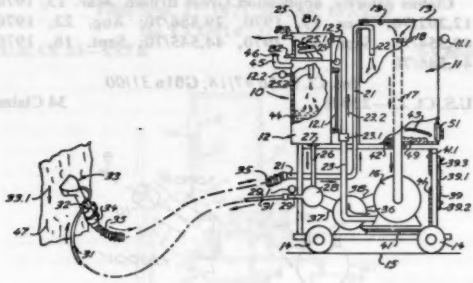
Filed Nov. 12, 1971, Ser. No. 198,111

Int. Cl. D06l *1/10*

U.S. Cl. 8—142 **9 Claims**

A continuous process of recovering dirty non-flammable solvent after discharge from a remote applicator moving over a fabric being cleaned. Immediate vacuum extraction of the dirty solvent from the applicator with purification effected by

boiling and condensation, condensate recirculated to applicator. Portable apparatus adapted for in-situ use includes an applicator to spray the solvent under pressure, vacuum pump structure for suction extraction and to provide some of the



pressure which is augmented by a liquid pump, electric or combustible gas means to boil dirty extracted solvent, condensa to distil pure solvent introduced into a supply tank for recirculation through the applicator.

3,775,054

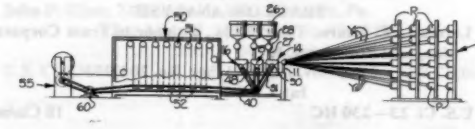
APPARATUS AND METHOD FOR DYEING TEXTILE STRAND MATERIALS

George L. DeVinney, P.O. Box 840, Rutherfordton, N.C.

Continuation-in-part of Ser. No. 879,281, Nov. 24, 1969, abandoned. This application June 8, 1972, Ser. No. 260,725

Int. Cl. B05c *1/06, 1/08, 1/16*

U.S. Cl. 8—149 **18 Claims**



An apparatus by which textile strand material such as yarn has imparted thereto an appearance of random color variation therealong and in which a substantially continuous length of yarn is advanced at a predetermined linear rate while a first dye is applied to the yarn substantially throughout the length thereof, additional dyes are applied to the yarn at incrementally spaced locations therealong, the colored yarn is heated to set the dyes thereon and the dyed yarn is wound into a package.

3,775,055

PROCESS FOR TREATING TEXTILE MATERIALS

Frederick C. Wedler, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

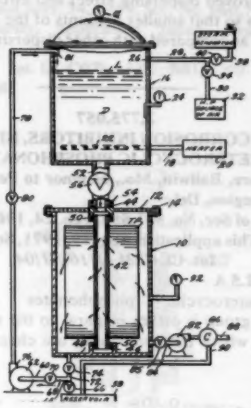
Continuation-in-part of Ser. No. 746,973, July 23, 1968, abandoned. This application Jan. 25, 1971, Ser. No. 109,501

Int. Cl. B05c *8/02*

U.S. Cl. 8—155.1 **24 Claims**

A process and an apparatus for batch treating of textile material such as yarn packages, raw stock, knit goods, muffs or the like by placing the material in an enclosed zone, evacuating the enclosed zone to provide a vacuum therein, and then flooding the evacuated zone with a treating agent by placing the evacuated zone into communication with a second zone having the treating agent therein under a positive pressure. A substantial pressure differential exists between the two zones, and the treating agent flows extremely rapidly through the textile material whereby, at the very outset of the treating process, the treating agent is uniformly distributed over the surfaces of the textile material and substantially in its original concentration and condition.

The temperature of the treating agent will depend upon the treatment. The process and apparatus are capable of recycling



or reversing the flow of the treating agent through the textile material as and when desired. Examples of treating agents are: dye liquor, scouring liquids, fixing agents, solvents, finishes or the like, or combinations of dye liquor with other treating agents, such as scouring chemicals, salt, and any other desired chemicals.

3,775,056

DISPERSE DYES AND SULFOSUCCINATE SEMI ESTERS OF POLYALKYLENE GLYOL ETHERS OF ALKYLPHENOLS OR PHENOL-FORMALDEHYDE CONDENSATES

Max Grossmann; Karl-Hermann List, both of Frankfurt/Main, and Heinz Uhrig, Steinbach/Taunus, all of Germany

Filed June 29, 1972, Ser. No. 267,646

Claims priority, application Germany, June 30, 1971, P 21 32 403.8

Int. Cl. D06p *5/04*

U.S. Cl. 8—169 **3 Claims**

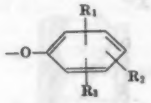
A dispersion of a disperse dyestuff which contains, as the dispersing agent, a sulfosuccinic acid semi-ester of the formula

$$A-(X-O)_n-CO-B \qquad (1)$$

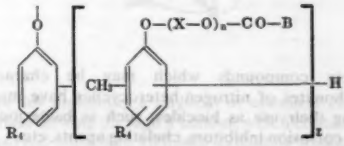
wherein B is

$$-CH_2-\underset{\displaystyle SO_3Me}{\underset{|}{CH}}-COOMe \quad \text{or} \quad -\underset{\displaystyle SO_3Me}{\underset{|}{CH}}-CH_2-COOMe$$

A is an alkylphenoxy of the formula



or a group of the formula



X is ethylene or propylene, R_1 is saturated alkyl having from four to 14 carbon atoms, R_2 and R_3 each are hydrogen or saturated alkyl having from six to 14 carbon atoms, R_4 is a saturated alkyl of six to 14 carbon atoms, *n* is an integer from 2 to 25, *z* is an integer from 1 to 9 and Me is hydrogen, alkali metal or an alkaline earth metal ion. These dispersing agents show a distinctly improved dispersing effect and effect a higher tinctorial strength so that smaller amounts of the dispersing agent are necessary as compared with other dispersing agents known hitherto.

3,775,057

USE AS CORROSION INHIBITORS, NITROGEN-HETEROCYCLIC PHOSPHONATES

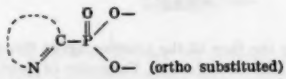
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 801,856, Feb. 24, 1969, Pat. No. 3,673,196. This application Aug. 19, 1971, Ser. No. 173,296

Int. Cl. C23f *11/16, 11/04*

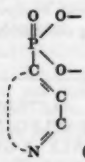
U.S. Cl. 21—2.5 A **5 Claims**

Nitrogen-heterocyclic phosphonates wherein the phosphonate group is ortho- or para- to the nitrogen heterocyclic group, where the compounds are characterized as follows:



(ortho substituted)

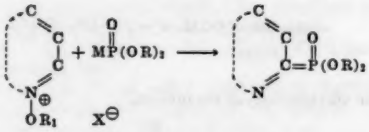
and



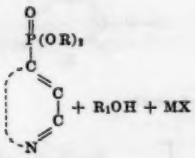
(para substituted)

wherein the dotted line represents a cyclic structure which cyclic structure may be the sole cyclic structure, or may be attached to other cyclic groups.

These nitrogen heterocyclic phosphonates are prepared by reacting an aromatic nitrogen-heterocyclic compound, wherein the nitrogen atom is in the form of a quaternary alkoxy derivative (N-OR hereinafter defined) with a phosphite salt, preferably in the form of an ester of the phosphite, as exemplified by the following equation:



and/or



These compounds which may be characterized as phosphonates of nitrogen-heterocyclics have many uses including their use as biocides, such as bacteriocides, herbicides, corrosion inhibitors, chelating agents, etc.

3,775,058

METHOD AND APPARATUS FOR MIXING LIQUIDS

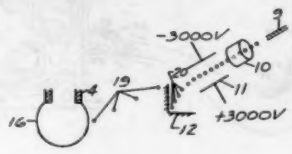
Brian Bush, London, England, assignor to Adler Auto Precision Ltd., New York, N.Y.

Filed Mar. 8, 1971, Ser. No. 121,737

Claims priority, application Great Britain, Mar. 13, 1970, 12,202/70; June 19, 1970, 29,886/70; Aug. 22, 1970, 40,554/70; Sept. 18, 1970, 44,545/70; Sept. 18, 1970, 44,546/70

Int. Cl. B65d *47/18*; **G01n** *31/00*

U.S. Cl. 23—230 R **34 Claims**



Method wherein droplets of liquid are formed by passage of the liquid through a droplet generator to form a stream of droplets typically by piezoelectric means. Droplets directed in contact with a different liquid rapidly diffuse into the latter liquid. By this technique controlled amounts of chemicals may be mixed reacted and subjected to analysis. Apparatus for carrying out this method includes means for producing at least one stream of droplets and means for directing droplets in desired directions. Furthermore, droplets of liquid may be automatically dispensed into moving containers. Additionally, droplets of a solute in a solvent may be concentrated by removal of solvent, evaporated and subjected to chromatographic analysis.

3,775,059

TRACE OIL ANALYSIS

Lerma L. E. Hearn, Tulsa, Okla., assignor to Fram Corporation, East Providence, R.I.

Filed Nov. 24, 1971, Ser. No. 201,943

Int. Cl. G01n *33/18*

U.S. Cl. 23—230 HC **18 Claims**

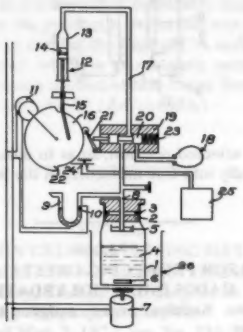
Trace concentrations of oil are measured by mixing the sample with an emulsifier to distribute the oil uniformly throughout the sample, transferring a measured portion of the emulsified sample to a reservoir of a bottle having a capillary neck, equilibrating the temperature of the sample portion to over 135° F, adding a demulsifier to the bottle, while keeping the liquid level therein below the neck, whirling the bottle in a heated centrifuge to separate out the oil, adding liquid to the bottle to raise the liquid level to form a column of separated oil wholly within the neck, equilibrating the temperature of the contents of the bottle, and measuring the length of the column of oil.

3,775,060

APPARATUS FOR MEASURING THE OXYGEN CONSUMPTION OF A REDUCING ORGANIC MEDIUM

Andre Courtois; Yves Lacombe; Jean Laporte, and Georges Kovacsik, all of Nimes, France

Filed Sept. 27, 1971, Ser. No. 183,928
Int. Cl. G01n *33/16, 33/18*
U.S. Cl. 23—253 R 6 Claims



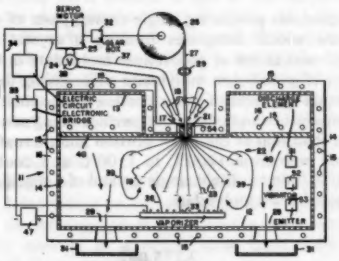
Apparatus for the automatic and continuous measurement of the course of the consumption of oxygen, also called the biochemical oxygen demand, of a sample of a reducing organic medium, at a substantially constant oxygen pressure. One of the applications of this apparatus is the study of the biochemical oxygen demand of water polluted by effluents.

3,775,061

APPARATUS FOR MAKING FIBERS

John P. Glass, 718 Lorraine Ave., Ardmore, Pa.

Filed Aug. 19, 1965, Ser. No. 480,918
Int. Cl. B01d *9/00*
U.S. Cl. 23-273 29 Claims



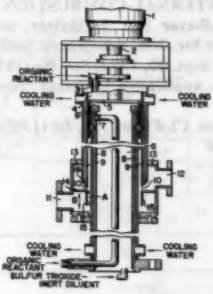
Apparatus for making crystal fibers by condensing a material from a vapor phase comprising a chamber, a vaporiser for supplying a vapor which is condensed and crystalized into fibers, heating elements around the chamber to maintain the vapor, cooling apparatus located at an exit orifice of the chamber, said cooling apparatus directing a stream of gas into the chamber to provide a cooler region where the vapor condenses to form solid fibrous materials, apparatus for applying an electrostatic charge to the growing fibers to fan out the ends of the fibers so that the ends are separated and individually exposed to the vapor, a reel for withdrawing the fibers through the exit opening, servo motor apparatus for operating the reel, an electric circuit for measuring the electrostatic charge on the fibers and actuating the reel in response thereto, and apparatus for coordinating the speed of rotation of the reel with the speed of producing fibers.

3,775,062

CURRENT FLOW, ANNULAR THIN FILM, GAS-LIQUID REACTOR

Rinnosuke Susuki; Shinzaburo Kushibiki; Shigeru Mitsuoka, and Kaname Abe, all of Tokyo, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Sept. 24, 1969, Ser. No. 860,729
Claims priority, application Japan, Sept. 30, 1968, 43/70114
Int. Cl. C07b *13/02*; B01j *1/00*
U.S. Cl. 23—285 2 Claims



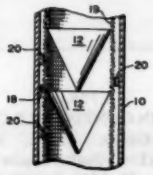
An apparatus for the continuous reaction of a liquid with a gas which comprises: two externally cooled, substantially concentric, stationary circular reaction surfaces, a rotatable circular rotor having a lid as well as a skirt extending from the upper end of the space between said reaction surfaces partway to the bottom of said space, a distribution ring for supplying recycled reaction product for quenching the reaction mixture which ring is equipped with a bedplate devised to form in combination with the lower end of a cooling jacket provided on the outer reaction surface a downwardly opening inlet for the recycled reaction mixture; means for turning the rotor and means for passing the reactant liquid and the reactant gas in parallel streams from the upper part to the space between said reaction surfaces and said rotor; and a circular wall beneath the outer reaction surface which is located concentrically with said reaction surface.

3,775,063

INTERACTIVE SURFACE MIXER

Kenneth M. Grout, Topsfield, and Richard D. Devellian, Rockport, both of Mass., assignors to Kenics Corporation, Danvers, Mass.

Filed Oct. 19, 1970, Ser. No. 81,869
Int. Cl. B01j *1/00*
U.S. Cl. 23—283 3 Claims



A device for producing a physical or chemical change of state in a fluid flowing through a conduit which contains a plurality of curved sheet-like elements extending longitudinally

through the conduit and in which consecutive elements are curved in opposite directions. The internal surfaces of the conduit and the surfaces of the sheet-like elements are coated with a material which interacts with a component of the fluid to produce such change. The surfaces may be formed of water or other solvents, catalysts, enzymes or other biologically active materials, and the fluid may contain components soluble in such solvents, or the fluid may contain materials upon which such catalysts, enzymes or biologically active materials act to produce the desired change of state.

3,775,064

APPARATUS FOR DETOXIFYING EXHAUST EMISSIONS OF AN INTERNAL-COMBUSTION ENGINE

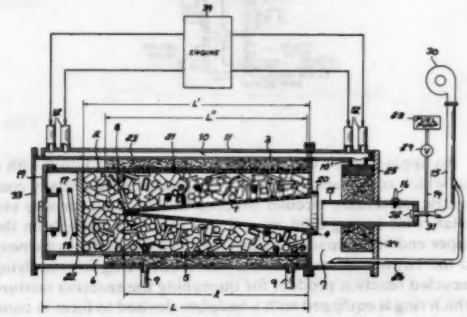
Heinz Berger, Albaxer Str. 2, Hoxter, and Heinz-Werner Berger, Drenker Str. 26b, Amelunxen, both of Germany

Filed Sept. 20, 1971, Ser. No. 181,692

Claims priority, application Germany, Sept. 19, 1970, P 20 46 324.5

Int. Cl. F01n *3/14*; **B01j** *9/04*

U.S. Cl. 23—288 F **27 Claims**



An antipollution device for detoxifying exhaust gases of an internal-combustion engine (i.e. a catalytic exhaust-gas reformer) has three nested coaxial tubes the inner two of which are perforated. The annular chamber between the inner tube and the intermediate tube is filled with a mass of catalyst kept in a packed condition by a spring-biased disk defining one end of the intermediate chamber. For this purpose the inner tube is conical and the intermediate tube can be cylindrical or conical. The outer chamber is filled with catalyst impregnated insulation and is provided with gas outlets while an entrance chamber communicates with the inner tube and is fed with raw exhaust gases from the engine through a feed chamber partially surrounding the outer tube. A burner is provided in the entrance chamber to heat up the catalyst during the first moments of engine operation to prevent fouling of this catalyst. The end of the apparatus may be removed for replacement of either of the inner two tubes, of the insulation, or of the catalyst.

3,775,065

GRAIN CONTROL IN CONTINUOUS CRYSTALLIZATION

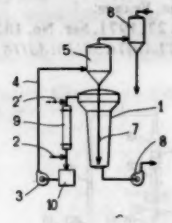
Yoshio Aoyama, Osaka, Japan, assignor to Daido Namarikakoki Co., Ltd., Osaka, Japan

Filed Dec. 27, 1968, Ser. No. 787,437

Int. Cl. B01d *9/02*

U.S. Cl. 23—295 **10 Claims**

Controlling grain sizes in continuous crystallization by transferring the liquid from the supersaturation side into the unsaturation side across the solubility curve prior to re-transferring into the supersaturation side across the solubility curve, and selecting the relative position of liquid to the solubility curve in the unsaturated side and the staying time of



liquid at such selected position, so as to dissociate molecular clusters desiredly into free molecules in the liquid prior to supersaturation.

3,775,066

METHOD FOR PRODUCING CRYSTAL PLATE OF GADOLINIUM MOLYBDATE

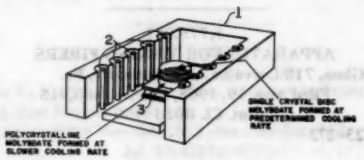
Hiroshi Yumoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 27, 1971, Ser. No. 183,864

Claims priority, application Japan, Sept. 30, 1970, 45/85068

Int. Cl. B01j *17/18*; **C01g** *39/00*

U.S. Cl. 23—301 SP **12 Claims**



A method for producing single crystal plate of gadolinium molybdate which comprises forming a crystal plate of a specified orientation of gadolinium molybdate at the surface of a melt of gadolinium molybdate while giving to the melt a temperature gradient of inner portion of the melt being at a high temperature and of the melt surface being at a lower temperature than that of the inner portion and thereafter cooling the whole melt from 1200°C to 1100°C at a cooling rate of 30°–170° C/min to obtain single crystal of a specified orientation of gadolinium molybdate.

3,775,067

COPPER BACKED ELECTRICAL CONTACT

Melvin L. Backstrom, Murrysville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Dec. 6, 1971, Ser. No. 205,273

Int. Cl. B32b *15/00*

U.S. Cl. 29—195 **5 Claims**

A copper backing is formed on a silver-cadmium oxide contact by first forming a bimetal strip having a thin layer of substantially pure silver and copper layer. The bimetal strip is secured at at least one end to a billet of the contact material, to retain them together during subsequent operations, with the silver surface of the bimetal strip against a surface of the billet of contact materials. The composite is then rolled to a substantial reduction of thickness, of the order of at least 50 percent to bond the silver surface of the bimetal to the contact material. This produces a tri-layer contact with the layers fully integrated, consisting of the main contact material section, an intermediate silver layer and a copper backing layer.

3,775,068

GLASS POLISHING AGENT OF SODIUM ZIRCONIUM SILICATE

John B. Miller, Geneva, and Marion F. Horrigan, Penn Yan, both of N.Y., assignors to Transelco, Inc., Penn Yan, N.Y.

Filed June 23, 1971, Ser. No. 156,093
Int. Cl. C09c *1/68*
U.S. Cl. 51—308 7 Claims

Sodium hydroxide or sodium carbonate is mixed with zircon, and heated to a temperature preferably about 2,200°F for 6 hours, and then the product is preferably wet-milled, adding phosphoric acid to control the final pH. A sodium zirconium silicate is obtained which is particularly suitable for glass polishing, and having a composition range from (0.1 Na_2O) (ZrO_2) (SiO_2) to (1.1 Na_2O) (ZrO_2) (SiO_2).

3,775,069

HYDROCARBON GELS CONTAINING METAL ALKOXY GELLANTS AND A DEHYDRATING AGENT

Thomas A. Whitney, Linden, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Mar. 3, 1972, Ser. No. 231,746
Int. Cl. C10i *7/00*
U.S. Cl. 44—7 C 15 Claims

A composition of matter comprising a gelatinous hydrocarbon containing a minor amount of a compound having either the formula MOR or

$$R''_x(QA)_zOM$$
$$(R''')_y$$

in combination with a compound having the formula M′(OR′) wherein M is one selected from the group consisting of Group IA metals; M′ is one selected from the group consisting of Group IIIA metals; R and R′ are independently selected from the group consisting of C_1-C_{25} straight or branched hydrocarbyl radicals; R″ and R‴ are the same or different wherein each is a C_1-C_{16} straight or branched hydrocarbyl radical; Q is O or N; A is a hydrocarbyl group containing from 2 to 4 methylenic carbon atoms having 0 to 2 substituents, said substituents being one selected from the group consisting of C_1-C_6 alkyl, C_3-C_6 cycloalkyl, phenyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, Cl, Br, I; n is an integer ranging from 1 to 10 inclusive; x is an integer and is either 1 or 2 depending on the valence of Q; y is either 0 or 1 depending on the valence of Q; in combination with either an effective amount of a dehydrating agent sufficient to prevent hydrolytic degelation or iron powder to provide the composition with magnetic properties.

3,775,070

FLUIDIZED SOLID PARTICLE FUEL

Leonard Messer, and Philip L. Woolf, both of Pittsburgh, Pa., assignors to American Minechem Corporation, Coraopolis, Pa.

Filed Dec. 5, 1969, Ser. No. 882,598
Int. Cl. C10l *5/00, 5/16*
U.S. Cl. 44—10 R 6 Claims

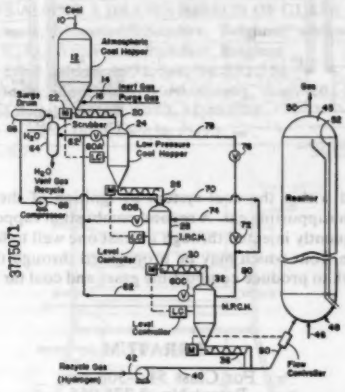
Coal fines dispersed in water are wetted by a carbonaceous liquid and the mixture agitated to cause agglomeration of the fines into pellets of reduced ash content and of a size and hardness suitable for controlled fluidization. The pellets are injected by an airstream into a combustion chamber as a solid fuel.

3,775,071

METHOD FOR FEEDING DRY COAL TO SUPERATMOSPHERIC PRESSURE

Franklin D. Hoffert, Mountainside, and Harold H. Stotler, Westfield, both of N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed July 20, 1971, Ser. No. 164,381
Int. Cl. C10g *1/06*; C10j *3/16, 3/50*
U.S. Cl. 48—197 R 2 Claims



A method for continuous feeding of dry coal particles from essentially atmospheric pressure to the superatmospheric pressure level of a coal gasifier or coal liquefaction reactor is achieved by a series of screw feeding devices each partially boosting the pressure level of the coal in stages to provide the dry coal at reactor pressure.

3,775,072

GAS PRODUCTION

Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 34,834, May 5, 1970. This application Dec. 14, 1970, Ser. No. 98,155The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.
Int. Cl. C10j *3/00*
U.S. Cl. 48—209 9 Claims

A process for producing high BTU gas which comprises contacting an organic feed material, containing hydrogen and at least 10 weight percent oxygen,with steam in a reaction zone in the presence of an alkali metal catalyst at an elevated temperature and an elevated pressure of at least 50 psig. It is particularly preferred to carry out gasification of the organic material at a pressure above 300 psig. Particularly preferred catalysts are potassium compounds, most preferably potassium carbonate. Preferred reaction temperatures are between 1200 and 1400°F.

3,775,073

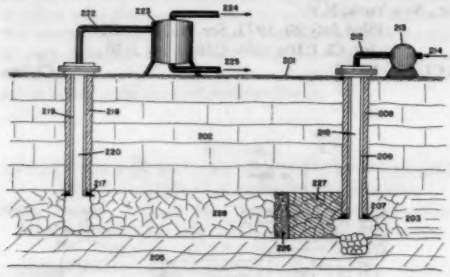
IN SITU GASIFICATION OF COAL BY GAS FRACTURING

Vaughan W. Rhoades, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Division of Ser. No. 50,790, June 29, 1970, abandoned. This application Aug. 27, 1971, Ser. No. 175,602
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 48—210 5 Claims

Two or more wells are drilled into a coal seam. The wells are completed so as to isolate all other strata from the coal

seam and a radially extended horizontal fracture is directed by introduction of a first combustion supporting gas under hydraulic pressure so as to connect the wells communitively. A horizontally and vertically directed fracture network is



formed within the coal system by ignition of the first combustion supporting gas. A second combustion supporting gas is subsequently injected through at least one well to form a combustion front which may be propagated through the fracture network to produce combustible gases and coal tar liquids.

ERRATUM

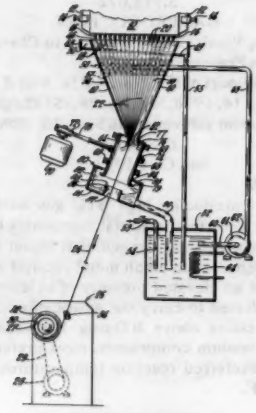
For Class 51—308 see:
Patent No. 3,775,068

3,775,074

METHOD AND APPARATUS FOR PROCESSING GLASS AND FORMING FIBERS THEREFROM

Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 760,554, Sept. 18, 1968, abandoned. This application Nov. 2, 1970, Ser. No. 86,359
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 **14 Claims**



The disclosure embraces a method of and apparatus for processing heat-softenable mineral materials, such as glass, to form fibers or filaments, the disclosure embracing a method and means for quenching streams of glass and fibers or filaments formed therefrom by a liquid environment at the region of delivery of the glass streams from a stream feeder for dissipating heat to condition the viscosity of the glass of the streams for efficient attenuation, the effect of the quenching being to impart irregular or roughened surfaces to the attenuated glass fibers or filaments.

3,775,075

METHOD OF FORMING OPTICAL WAVEGUIDE FIBERS

Donald B. Keck, Big Flats, and Robert D. Maurer, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,840
Int. Cl. C03c *25/02*; C03b *21/00*
U.S. Cl. 65—3 **19 Claims**

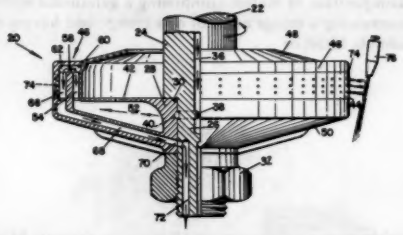
A method of forming an optical waveguide by first forming a coating of glass with a predetermined index of refraction on the outside peripheral wall surface of a glass cylinder having a different predetermined index of refraction. The glass cylinder and glass coating combination is then heated and drawn to reduce the cross-sectional area and form a clad optical fiber where the core is formed from the glass cylinder and the cladding is formed from the glass coating.

3,775,076

ROTOR COOLING SYSTEM FOR A CENTRIFUGAL ROTARY FIBERIZING UNIT

John M. Pallo, Washington, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,901
Int. Cl. C03b *37/04*
U.S. Cl. 65—12 **7 Claims**



The rotor of a fiberization unit for the centrifugal formation of termoplastic filaments has an improved cooling system to cool the base and the peripheral wall of the rotor. A coolant chamber beneath the base cools the base and arcuate cooling chambers at the upper extremity of the peripheral wall cool the wall and radially directed orifices in the wall from which filaments are ejected.

3,775,077

MANUFACTURE OF VITREOUS SILICA BODIES

Carmine A. Nicastro, Jr., Big Flats; Roelant S. L. Vander Noordaa, Corning, and William A. Ward, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

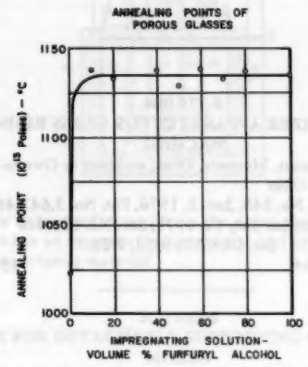
Filed June 28, 1971, Ser. No. 157,710
Int. Cl. C03b *23/20*,
U.S. Cl. 65—18 **10 Claims**

A green body formed of substantially −60 mesh particles of crystalline silica and/or glass having a SiO_2 content of at least 90 wt. percent is initially fired in ambient atmosphere of helium to temperature of about 1,600°–1,725° C. so as to leave about 5–20 percent helium-filled porosity with pore diameters of about 0.05–0.5 micron and communicating with the ambient atmosphere at the surface of the body. Then, the helium is substantially replaced with argon and firing is continued to temperature of about 1,730°–2,200° C. at a rate to concurrently effect escape of the helium from the pores substantially via the communication thereof with the ambient argon atmosphere and the virtual collapse and elimination of the pores. Resultant product is virually free of occluded bubbles.

3,775,078
PROCESS FOR MAKING CARBON-CONTAINING CERAMICS

Thomas H. Elmer, Corning, and Helmuth E. Meissner, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 22, 1972, Ser. No. 255,845
Int. Cl. C03c *21/00*
U.S. Cl. 65—32 4 Claims

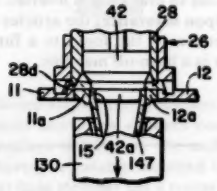


A process for carbon-impregnating a refractory porous article,particularly a porous glass article, comprising the steps of impregnating the porous article with a polymerizable furan derivative, polymerizing the furan derivative in situ in the article to form a resin, and firing the article in a nonoxidizing atmosphere to a temperature at least sufficient to convert the resin to carbon, is disclosed. The resulting article has useful thermal and electrical properties.

3,775,079
METHOD FOR SIMULTANEOUSLY FORMING RIM AND PARISON

Roy N. Sundstrom, Corning, and William R. Wisner, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 813,534, April 4, 1969, Pat. No. 3,598,560. This application Dec. 15, 1970, Ser. No. 98,270
Int. Cl. C03b *9/14*
U.S. Cl. 65—79 6 Claims

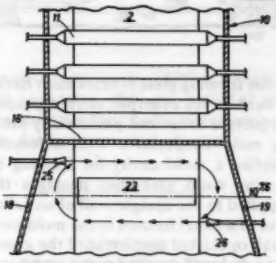


A blow-head assembly and a method of forming parisons from charges of molten glass deposited on the upper surfaces of axially separable neck ring mold assemblies and associated neck ring mold halves in an overlying relationship with the entrance to the orifices embodied in such assemblies and mold halves and extending vertically therethrough. Parison molds are disposed below the orifice of each said assembly and its associated mold halves, and said blow-head assembly comprises a combined plunger and blow-tip embodied in the bore of a hollow sleeve member and longitudinally movable therein. Forming method comprises blowing the glass charges through orifices of the neck ring molds and into conformity with such molds and parison molds therebelow, and momentarily moving said plunger downwardly into the glass in the orifices of the neck ring molds to press-form the upper rim and inner periphery of neck portion of each parison.

3,775,080
METHOD AND APPARATUS FOR CONTROLLING GAS FLOWS ALONG A DRAWN RIBBON OF GLASS

Claude Brichard, Moustier/S/Sambre, Belgium, assignor to Glaverbel S. A.,, Watermael-Boitsfort, Belgium

Filed July 14, 1972, Ser. No. 271,758
Claims priority, application Luxembourg, Aug. 20, 1971, 63755; Great Britain, July 5, 1972, 31,485/72
Int. Cl. C03b *15/12*
U.S. Cl. 65—95 36 Claims

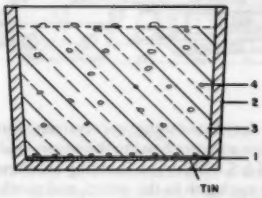


To improve the thermal conditions to which a glass ribbon is exposed while being drawn upwardly along a path through a drawing chamber and annealing lehr from a molten glass bath, gases along the path and at one side of the ribbon are displaced across the path and parallel to the ribbon in respectively opposite directions from a pair of respective locations spaced apart along the path, the spacing between the locations being such that the viscosity of the glass in the ribbon changes by no more than $10^{2.5}$ poises while traveling therebetween and the viscosity of the glass at one location being between $10^{7.6}$ poises and 10^{13} poises.

3,775,081
METHOD OF MANUFACTURING GLASS

Harold Pritchard Williams, and Martinus Hubertus Cornelis Gijbels, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 785,340, Dec. 9, 1968, abandoned. This application Sept. 29, 1971, Ser. No. 184,942
Int. Cl. C03b *23/14*
U.S. Cl. 65—134 3 Claims

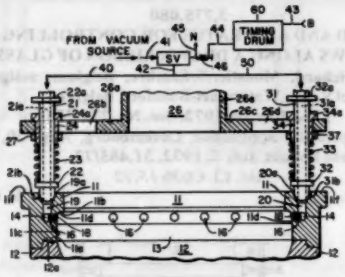


A method of manufacturing glass in which water-vapor produced in a glass melt is reduced to hydrogen by a metal at the bottom of the melt which is unable to reduce oxidic components of the glass into metal or metalloid, e.g. tin, lead, antimony, or nickel.

3,775,082
GLASS FORMING APPARATUS

Lynn A. Carpenter, State College, Pa., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,803
Int. Cl. C03b *11/02*
U.S. Cl. 65—162 **5 Claims**

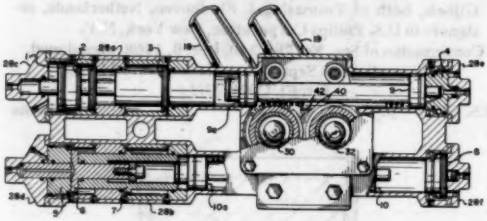


Apparatus for forming glass articles each having a generally upright wall, such as, for example, skirted glass viewing panels for television picture tubes and particularly including a novel type of ring mold cooperative with a female main mold member to define a mold cavity for forming the articles or panels. The ring mold embodies passages through which vacuum is supplied to the upright wall of an article such as the skirted portion of a panel formed in the mold cavity to support the upright wall or skirted portion until the glass of the article or panel has cooled sufficiently for the upright wall or skirted portion of the formed article or panel to be self-supporting. Means are disclosed for providing vacuum to the passages in the ring mold at a selected time or times following the forming of the article or viewing panel.

3,775,083
PNEUMATIC SELECTIVE GLASS GOB DISTRIBUTION SYSTEM

Hermann H. Nebelung, Binz-Maur, Switzerland, and Thomas V. Foster, Cantley Manor, England, assignors to Emhart Corporation, Bloomfield, Conn.

Filed July 2, 1971, Ser. No. 159,262
Int. Cl. C03b *5/30*
U.S. Cl. 65—225 **6 Claims**

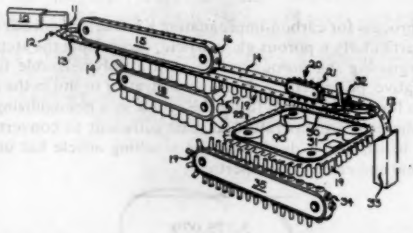


A system for distributing successively formed groups of glass gobs from a feeder bowl to the several individual sections of a Hartford I. S. Glassware Forming Machine includes a single scoop for each gob in the group, and mechanism for rotating the scoops between successive positions wherein each is aligned with a chute associated with a particular mold cavity in each machine section. A "double-gob" installation is described and the two scoops have associated annular spur gears which are driven in unison by a pair of reciprocable rack gears through a predetermined schedule of angular displacements to successively align the two scoops with several sets of paired chutes according to a particular "firing" order. A pair of air-driven actuators are stopped by any one or more of a plurality of individual pistons, each of which pistons are individually movable through a predetermined linear displacement and stopped by other pistons in turn. The programmed movement of the rack gears is provided in response to compressed air provided at predetermined ports in the actuators to produce the predetermined schedule of angular displacements of the scoops.

3,775,084
PRESSURIZER APPARATUS FOR GLASS RIBBON MACHINE

Richard A. Heaton, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 245, Jan. 2, 1970, Pat. No. 3,642,461. This application July 12, 1971, Ser. No. 161,446
Int. Cl. C03b *9/12, 9/28*
U.S. Cl. 65—264 **15 Claims**



The invention pertains to ribbon machine manufacture of glass articles and employs a pressurizer machine inserting a pressurizer nozzle into the formed articles attached to the ribbon. The nozzles direct a flow of air under pressure from within the neck region of the article in an upwardly direction toward the mouth of the article. Simultaneously with such air flow, a crack-off device severs the article from the ribbon and any glass chips or particles are expelled by the pressurizer air flow. As the article is severed, it drops by gravity a short distance onto individual transfer tongs traveling with the ribbon and just previous to crack-off is inserted around the article neck region. Upon severance, the articles are individually delivered in succession by the tongs to a further processing machine unit, such as a burn-off machine.

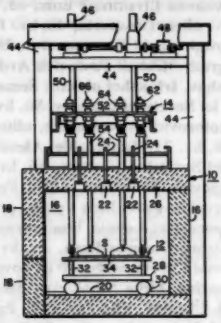
3,775,085
FORMING VESSELS FROM GREEN GLASS-CERAMIC SHEETS

Lewis L. Bognar, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 26,492, April 8, 1970, Pat. No. 3,681,043. This application July 25, 1972, Ser. No. 274,927
Int. Cl. C03b *23/02*
U.S. Cl. 65—289 **3 Claims**

Green glass sheets which are crystallizable into a glass-ceramic upon the application of heat, are heat-softened and

vacuum-formed into vessel shaped articles, through a controlled application of radiant heat which is applied at such a



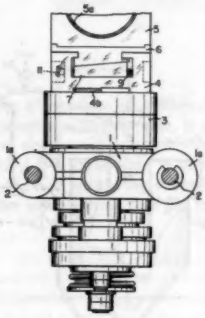
rate so as to heat soften and form the green glass sheet before the sheet has an opportunity to nucleate and crystallize into a rigid glass-ceramic material.

3,775,086

DEVICE FOR DETACHABLY SUPPORTING GLASS BULB MOLDS

Tsueno Muranaka, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki-shi Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 839,397, July 7, 1969, abandoned. This application Oct. 21, 1971, Ser. No. 191,232
Claims priority, application Japan, July 20, 1968, 43/50906
Int. Cl. C03b *9/40*
U.S. Cl. 65—323 **10 Claims**



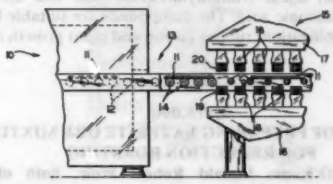
A supporting device for releasably supporting a pair of mold halves upon a mold conveying element comprises a pair of support base members slidable on the mold conveying element and each having releasably mounted thereon one mold half. Each support base member has a recess therein terminating in a pair of ledge portions and each mold half is provided with a mold holding section having a pair of grooves therein engageable with the ledge portions to releasably support the mold upon one support base member. Each mold holding section is provided with an inclined bottom surface and a movable wedge member is provided within each recess and has a similarly inclined upper surface. Means are provided for moving the wedge member into and out of wedging engagement with the inclined bottom surface of the mold holding section to releasably lock the mold holding section of the molds to the mold conveying element whereby the mold halves may be easily removed and exchanged.

3,775,087

APPARATUS FOR CONVEYING AND HEAT TREATING HOT GLASS WITH A ROLLER CONVEYOR

George F. Ritter, Jr., Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Mar. 6, 1972, Ser. No. 231,978
Int. Cl. C03b *27/00*
U.S. Cl. 65—348 **6 Claims**



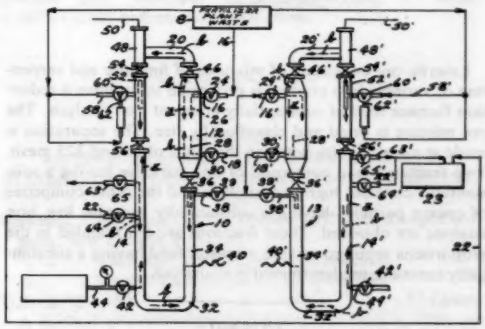
Tubular conveyor rolls, in the chilling section of a sheet glass tempering apparatus, that are provided with braided sleeve coverings and have their hollow interiors partially filled with lead shot to dampen unwanted vibrations.

3,775,088

PROCESS FOR TREATING FERTILIZER PLANT WASTE STREAMS

Irwin R. Higgins, Oak Ridge, Tenn., assignor to Small Business Investment Company of New York, Inc.

Filed Feb. 28, 1972, Ser. No. 229,741. The portion of the term of this patent subsequent to May 18, 1988, has been disclaimed.
Int. Cl. B01d *15/06*
U.S. Cl. 71—1 **8 Claims**



A continuous process for treating a fertilizer plant waste aqueous stream containing ammonium, hardness metal and nitrate values to recover an ammonium nitrate fertilizer and a demineralized and substantially nitrate-free aqueous stream for recycle includes initially removing the ammonium ion and hardness metal ion values from the fertilizer plant waste aqueous stream with a cation exchange resin bed and then contacting the essentially ammonium and hardness metal ion-free aqueous stream with an anion exchange resin bed to recover a second ammonium nitrate fertilizer stream and a demineralized and nitrate-free aqueous stream.

3,775,089

METHYLATED MUCONIC ACID HYDRAZIDES

Anne R. Donnell, Fort McMurray, Alberta, Canada

Division of Ser. No. 49,176, June 23, 1970. This application Nov. 2, 1971, Ser. No. 194,927

Int. Cl. A01n 9/20

U.S. Cl. 71—76 6 Claims

Mono and dihydrazides of the cis-cis, cis-trans and trans-trans isomers of methylated muconic acids including α-methylmuconic acid, β-methylmuconic acid, α,α′-dimethylmuconic acid, α,β′-dimethylmuconic acid, α,α′,β-trimethylmuconic acid, α,β,β′-trimethylmuconic acid and α,α′,β,β′-tetramethylmuconic acid. The compounds are suitable for use in rubber stabilization, rubber curing and plant growth regulation.

3,775,090

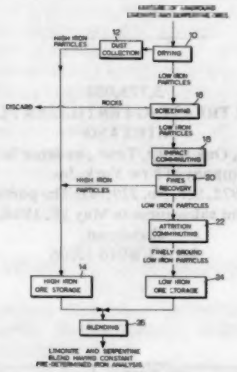
METHOD OF PREPARING LATERITE ORE MIXTURES FOR REDUCTION ROASTING

Patrick T. O'Kane; Donald Robert Weir, both of Fort Saskatchewan, Alberta, and Vladimir N. Mackiw, Islington, Ontario, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Oct. 5, 1970, Ser. No. 77,982

Int. Cl. C21b 1/00

U.S. Cl. 75—1 6 Claims



Laterite ore consisting of mixtures of limonite and serpentine of variable iron content is processed to produce a reduction furnace feed of substantially constant iron analysis. The ore mixture is dried and classified by size. The separation is made at a particle size between the range of 65 and 325 mesh. Two fractions, one composed of fine particles having a substantially constant high iron analysis and the other comprises of coarse particles having a substantially constant low iron analysis are obtained. These fractions are dry blended in the proportions required to give a roaster feed having a substantially constant, predetermined iron analysis.

3,775,091

INDUCTION MELTING OF METALS IN COLD, SELF-LINED CRUCIBLES

Philip G. Clites, Silverton, and Robert A. Beall, Albany, both of Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 27, 1969, Ser. No. 802,805

Int. Cl. C22b 53/00; C22d 7/08

U.S. Cl. 75—65 11 Claims

Metals such as titanium and zirconium are melted and formed by induction heating within a cold segmented metal crucible having a self-generating and self-renewing insulating lining.

3,775,092

METHOD OF REFINING ALUMINIUM-SILICON ALLOYS

Jury Ivanovich Brusakov, Novo-Izmailovsky prospekt, 37, kv. 42; Irma Solomonovna Livshits, 3 linia, 48, kv. 21; Vasily Pavlovich Kiselev, ulitsa Lensoveta, 48, kv. 10; Vasily Mikhailovich Cheltsov, prospekt Kosmonavtov, 38, korpus 2, kv. 92, all of Leningrad; Mikhail Pavlovich Avdeev, 7 kvartal, 30, kv. 7, Shelekhov, Irkutskoi oblasti; Semen Panteleevich Marin, ulitsa 40 let Sovetskoi Ukrainy, 86, kv. 53, Zaporozhie; Miro Khristoforovich Alivoivodich, ulitsa 40 let Sovetskoi, Ukrainy, 46, kv. 21, Zaporozhie; Alexei Kuzmich Kulikov, ulitsa 40 let Sovetskoi Ukrainy, 66, kv. 76, Zaporozhie; Ivan Arkhipovich Berezhnoi, ulitsa Patrioticheskaya, 15, kv. 20, Zaporozhie; Pavel Ilich Volpin, prospekt Lenina, 210, kv. 16, Zaporozhie; Leonid Vladimirovich Chernyakhovsky, ulitsa Kizhne-Dneprovskaya, 4b, kv. 75, Zaporozhie; Zoya Vasilievna Eltsova, ulitsa 40 let Sovetskoi Ukrainy, 6, kv. 71, Zaporozhie; Lidia Nikolaevna Medvedeva, ulitsa 40 let Sovetskoi Ukrainy, 66, kv. 172, Zaporozhie, and Fedor Mifodievich Kolomitsky, ulitsa 21 Partsiezda, 16, kv. 92, Zaporozhie, all of U.S.S.R.

Filed Aug. 24, 1971, Ser. No. 174,533

Claims priority, application U.S.S.R., Nov. 11, 1970, 1485657; Nov. 11, 1970, 1485664

Int. Cl. C22b 21/06

U.S. Cl. 75—68 A 3 Claims

The method consists in that the aluminum-silicon alloy is first treated with flux at a temperature not under 1,500°C, then it is treated with more of the same flux at 900°–1,200°C.

3,775,093

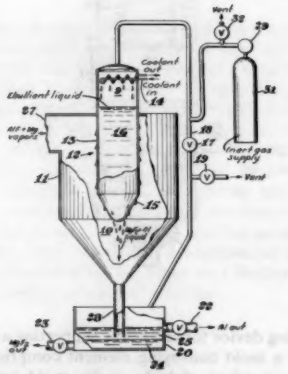
EBULLIENT COOLING OF HIGH TEMPERATURE METALLIFEROUS VAPORS

Gilbert S. Layne, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 851, Jan. 6, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 212,728

Int. Cl. C22b 21/00

U.S. Cl. 75—68 B 8 Claims



Metalliferous vapors are condensed on an ebulliently cooled heat-conducting wall member of a heat exchanger. The metalliferous vapor comprising the vapors of an aluminum halide and an alkali metal or alkaline earth metal are condensed to produce two immiscible liquid phases of aluminum and an alkali metal, or alkaline earth metal, halide respectively. The temperature of the ebullient liquid is controlled by regulating the composition of the ebullient liquid, the pressure over it or both. Preferably the wall member is constructed of a material which is preferentially wet by the molten alkali metal or alkaline earth metal halide relative to molten aluminum. Accordingly, erosion of the salt-wet wall member by liquid alu-

minum is substantially reduced. Preferred ebullient liquids include alloys of copper and magnesium or zinc and magnesium chloride. Any of these materials would safely mix with liquid aluminum and the alkali metal or alkaline earth metal condensate in the event of catastropic failure of the heat exchanger walls.

3,775,094

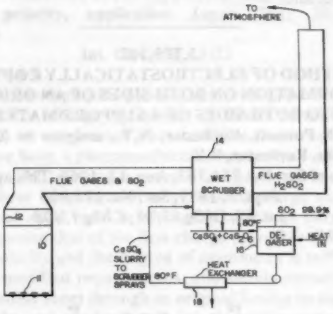
COLLECTION OF SULFUR VALUES FROM FLUE GASSES GENERATED BY METALLIC SULFIDE SMELTING AND CONVERTING

Robert T. McKie, Marenisco, Mich., assignor to Copper Range Company, New York, N.Y.

Continuation of Ser. No. 748,090, July 26, 1968, abandoned. This application Mar. 19, 1971, Ser. No. 126,368

Int. Cl. C22b *15/04*; **C01b** *17/50*

U.S. Cl. 75—74 **1 Claim**



In the processing of nonferrous sulfide ores, the resulting flue gas, which contains sulfur dioxide, is passed through an aqueous scrubber containing calcium sulfate or calcium sulfite. The resulting SO_2 collection is several times greater than in the case of prior scrubbing techniques. This system also has application in scrubbing flue gas from sulfur bearing fuel.

3,775,095

REMOVAL OF DUST PARTICLES FROM A DUST LADEN STREAM OF GASES EXITING FROM A MULTIPLE HEARTH FURNACE AND REINJECTION OF DUST PARTICLES INTO THE FURNACE

James W. Gulyas, Fort Saskatchewan, Alberta, Canada, and Patrick T. O'Kane, Dasmarinas, Philippines, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

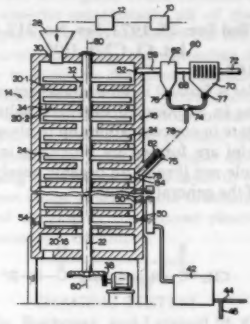
Filed June 17, 1971, Ser. No. 153,954

Claims priority, application Canada, May 3, 1971, 111923

Int. Cl. C22b *23/00*

U.S. Cl. 75—82 **3 Claims**

Ore is fed into the top of a multiple hearth furnace and, as it travels downwardly through the furnace, it is reduction roasted by means of a rising stream of hot reducing gases. Fine ore particles picked up by the combustion gases within the furnace and exiting therewith are removed from the gases and reinjected into the furnace at a point at which the degree of reduction of the particles approximates the degree of reduction of the ore which passes downwardly at the point. To



prevent the injected particles from being carried upwardly by the partial combustion gases, the particles are injected in the form of a continuous plug.

3,775,096

PRODUCTION OF NIOBIUM AND TANTALUM

Ronald A. Guidotti, Sparks, and Ernst K. Kleespies, Reno, both of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 15, 1973, Ser. No. 323,557

Int. Cl. C22b *51/00*

U.S. Cl. 75—84 **6 Claims**

Niobium or tantalum metal is produced by a process comprising (1) reaction of the corresponding oxide with ammonia to form the nitride and (2) decomposition of the nitride at elevated temperature and reduced pressure to form the metal. In the case of niobium, the reaction between the oxide and ammonia is preferably carried out in two stages, with initial formation of an oxynitride phase at a temperature of about 650° to 850°C, and subsequent further reaction of the oxynitride with ammonia at a temperature of about 1,100°–1,500C to form the nitride phase.

3,775,097

METHOD OF EXTRACTING A METAL FROM A MATERIAL CONTAINING THE METAL IN ELEMENTAL FORM

Robert E. Cech, Scotia, N.Y., assignor to Copper Range Company, New York, N.Y.

Filed Apr. 15, 1971, Ser. No. 134,412

Int. Cl. C22b *15/10*, *15/00*; **C01a** *3/04*

U.S. Cl. 75—103 **17 Claims**

A method of extracting a metal, such as copper, from ore tailings or scrap metal containing the metal in elemental form. The copper-containing material is enclosed in a sealed enclosure and is initially heated by steam to a temperature generally in the range of 50° C to 100° C. The material is then contacted with an ammonia-containing vapor which serves to dissolve the copper oxide and basic carbonate film on the elemental copper and forms a coating of a copper-ammine complex. Subsequently, the material is exposed to chlorine gas and the copper-ammine complex serves to transport the chlorine to the copper surface in a form such that a rapid chlorination of the copper occurs. The copper chloride is then leached from the material and the copper is recovered from the leaching solution by conventional techniques.

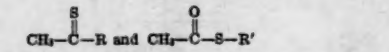
3,775,098

COBALT PRECIPITATION FROM AQUEOUS SOLUTIONS

Wasyl Kunda, Edmonton, Alberta, and Roderick Herbert Hitesman, Saskatchewan, Alberta, both of Canada, assignors to Sherritt Gordon Mines Limited, West Toronto, Ontario, Canada

Filed Dec. 27, 1971, Ser. No. 212,419
Int. Cl. C22b 3/00
U.S. Cl. 75—108 6 Claims

Cobalt nuclei is formed in an aqueous ammoniacal solution which contains in addition to dissolved salts of cobalt, ammonium sulphate in concentrations up to about 500 grams per litre. The nuclei are formed by providing in the solution at least 0.001 mole per litre of an organic catalyst composed of compounds of the general formula



wherein R is NH_2 or $NH-C_xH_{x-1}$, x being from 2 to 10 and R′ is an alkali metal. The solution is reacted with hydrogen at elevated temperature and pressure to cause dissolved cobalt values to precipitate as discrete elemental powder which is useful as seed for subsequent densification. Optionally in addition to the organic catalyst, an organic promoter composed of gum arabic, dextrin, dextrose, alizarin and "Separan" may be provided in the solution.

3,775,099

METHOD OF WINNING COPPER, NICKEL, AND OTHER METALS

Thomas H. Coffield, Orchard Lake, and Kestutis A. Keblys, Southfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 717,034, Mar. 28, 1968, abandoned, which is a continuation-in-part of Ser. No. 807,987, Mar. 17, 1969.
Filed July 17, 1970, Ser. No. 55,850
Int. Cl. C22b 3/00
U.S. Cl. 75—119 24 Claims

The invention is a process for winning nickel by treating an aqueous ammonium salt solution of nickel salts with a carbon monoxide-containing gas under reducing conditions to produce nickel carbonyl and subsequently recovering nickel therefrom. Optionally, the production of nickel carbonyl can be catalyzed, for example, by cyanide. Also, an essentially water-immiscible solvent for nickel carbonyl can optionally be employed. The aqueous ammoniacal solution is typically an aqueous ammoniacal ammonium chloride, carbonate, sulfate, hydroxide, or mixture thereof. The valuable metals associated with nickel, e.g., copper, cobalt, iron, and precious metals, are also separated and recovered by this process. The general nature of the process allows a wide variety of primary and secondary sources of nickel to be utilized by combining this process with a number of known ore-treatment steps.

3,775,100

PROCESS FOR MAKING SINTERED ARTICLES

Donald E. Kizer, Columbus, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Filed July 29, 1970, Ser. No. 59,201
Int. Cl. B22f 1/00
U.S. Cl. 75—212 10 Claims

A process for making sintered articles from powdered particles of high-temperature nickel-base or cobalt-base alloys which contain from 3.0 to 30.0 weight percent of refractory elements having a melting point at least 450°C. above that of the base metal, the particles being characterized by a concentration at their surface of refractory elements or intermetallic compounds which constitutes a barrier to the diffusion of alloying elements, which process comprises coating said particles with a thin layer of a diffusion-promoting metal which is a constituent of the alloy to be sintered and is selected from the group consisting of cobalt, nickel, titanium, zirconium, iron, and vanadium, the quantity of said diffusion-promoting metal being insufficient to materially change the composition and properties of the alloy to be sintered, compacting the particles into an article of the desired shape, and sintering the compacted article in a non-reactive environment at normal sintering temperatures.

3,775,101

METHOD OF FORMING ARTICLES OF MANUFACTURE FROM SUPERALLOY POWDERS

John C. Freche, Fairview Park; William J. Waters, Cleveland, and Richard L. Ashbrook, Berea, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 29,917, April 20, 1970, Pat. No. 3,702,791. This application Mar. 10, 1972, Ser. No. 233,743
Int. Cl. B22p 1/00
U.S. Cl. 75—213 9 Claims

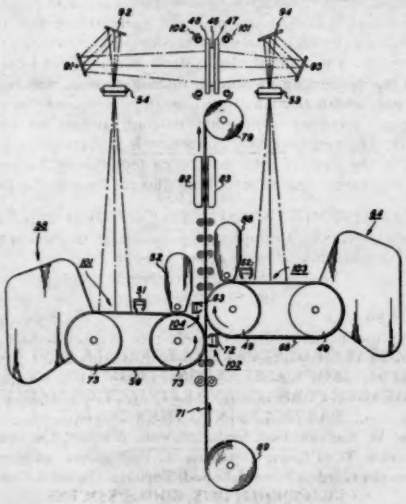
A highly alloyed superalloy material is obtained using prealloyed powders. The material is easily shaped at high temperatures when it becomes superplastic because of its particular microstructure.

3,775,102

METHOD OF ELECTROSTATICALLY COPYING INFORMATION ON BOTH SIDES OF AN ORIGINAL ONTO BOTH SIDES OF A SUPPORT MATERIAL

Frazer D. Punnett, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 751,783, Aug. 12, 1968. This application Sept. 3, 1971, Ser. No. 177,809
Int. Cl. G03g 13/08; C03g 15/08
U.S. Cl. 96—1 R 2 Claims



A method for duplex printing or reproducing the information from both sides of an original document upon a support material by simultaneously forming an electrostatic latent image conforming to each side of the original document on respective photoconductive plates, developing the plates and transferring the developed images from the plates onto opposite sides of the support material.

3,775,103

ELECTROPHOTOGRAPHIC MATERIAL AND PROCESS FOR PRODUCING SAME

Shigeru Sadamatsu, and Hiroyuki Kaneko, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 615,384, Feb. 13, 1967, abandoned. This application Nov. 10, 1971, Ser. No. 197,532

Int. Cl. G03g 13/08, 13/16

U.S. Cl. 96—1 R 12 Claims

An electrophotographic process utilizing a composite photoconductive powder comprising a closely adhered mixture of a photoconductive powder and a transparent non-photoconductive powder typically used for electrophotographic print marking.

3,775,104

ELECTROPHOTOGRAPHIC PROCESS USING CORONA DISCHARGE CURRENT OF AN ASYMMETRICAL WAVE FORM

Shoji Matsumoto, Neyagawa; Noboru Yonaha, Hirakata, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Dec. 28, 1971, Ser. No. 212,898

Claims priority, application Japan, Dec. 29, 1970, 45/121544

Int. Cl. G03g 13/22

U.S. Cl. 96—1 R 5 Claims

An electrophotographic process comprising the steps of (*a*) applying a first charge by means of direct current corona discharge to an overcoated photosensitive sheet consisting of a conductive base, a photoconductive layer and a surface insulating layer; (*b*) applying a second charge to the so charged sensitive sheet by means of a corona discharge current of asymmetrical wave form in which the discharge current of a polarity opposite that of the first charge is greater than that of the same polarity and the degree of asymmetry is sufficient to satisfy the specified requirements, and simultaneously exposing the sensitive sheet through or original having an image pattern of light and shadow: and (*c*) thereafter exposing the photosensitive sheet to an uniform illumination over the entire surface to form a latent electrostatic image of the light area and a latent electrostatic image of the dark area, which are of opposite polarity to each other.

3,775,105

DISAZO PIGMENT SENSITIZED PHOTOCONDUCTOR

William J. Kukla, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,893

Int. Cl. G03g 5/06

U.S. Cl. 96—1.6 9 Claims

A photoconductor of the organic type is disclosed where a sensitizing disazo pigment is milled to a submicron particle size in an alkyl substituted benzene or alkyl substituted benzene blended with another solvent resulting in a more light sensitive photoconductor with good stability characteristics.

3,775,106

ELECTROPHOTOGRAPHIC PROCESS

Yasuo Tamai, and Sadao Osawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 27, 1971, Ser. No. 175,450

Claims priority, application Japan, Aug. 28, 1970, 45/75319

Int. Cl. G03g 7/00, 11/00, 13/02

U.S. Cl. 96—1.2 8 Claims

An electrophotographic process which comprises uniformly charging a surface of a photoconductive insulating layer having light-sensitivity in an intrinsic sensitive region and extended spectrum region, the photoconductive insulating layer exhibiting light fatigue when exposed to light in the range of its intrinsic sensitive region, imagewise exposing the surface to light which covers the entire light-sensitive region of the light-sensitive layer from an original which includes a first colored portion which absorbs substantially all of the light and a second colored portion which absorbs from the light substantially only the wavelength range corresponding to the intrinsic sensitive region to form on the photoconductive insulating layer an electrostatic latent image corresponding to the first colored portion and a substantially non-conductive area corresponding to the second colored portion, developing the electrostatic latent image by electroscopic developer, again uniformly charging the surface of the layer to form a second electrostatic latent image at least at the substantially non-conductive area and developing the second electrostatic latent image with electroscopic developer.

3,775,107

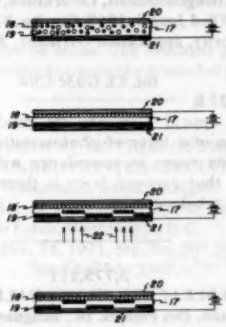
IMAGING SYSTEM

Vsevolod Tulagin, Rochester, and Leonard M. Carreira, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,851

Int. Cl. G03g 13/14, 13/16

U.S. Cl. 96—1.4 7 Claims



A photoelectrophoretic imaging system wherein formation of an insulating surface on an electrode is accomplished by particle migration of a particulate resinous material onto the electrode prior to imaging. The resinous material is preferably suspended in the imaging suspension.

3,775,108

COPYING MATERIAL FOR USE IN ELECTROPHOTOGRAPHY

Fumiaki Arai, Tokyo; Wasaburo Ohta; Junji Kurokawa, both of Yokohama; Noriyuki Usui, Kawasaki; Sakae Shimizu, Tokyo, and Tetsuo Tanaka, Kasukabe, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 830,252, June 4, 1969, Pat. No. 3,682,632. This application June 26, 1972, Ser. No. 266,147

Claims priority, application Japan, June 14, 1968, 43/40585; Sept. 9, 1968, 43/64271; Oct. 2, 1968, 43/71153; Oct. 12, 1968, 43/74449; Oct. 9, 1968, 43/73174

Int. Cl. G03g 5/04, 5/08

U.S. Cl. 96—1.8 2 Claims

An electrophotographic copying material having a photoconductive layer formed on the surface of a support, whose back is pre-coated with an electroconductive layer, with an intermediary layer between said photoconductive layer and the support, said intermediary layer comprising a printing-durable polymer consisting of the reaction product of vinyl polymer, polymer having urethane bonds and water-soluble amino resin.

3,775,109

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE PLATE

Wasaburo Ohta, and Katutoshi Endo, both of Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 20, 1970, Ser. No. 38,947
Claims priority, application Japan, May 22, 1969, 44/39787
Int. Cl. G03g 5/06
U.S. Cl. 96—1.5 17 Claims

An electrophotographic photosensitive plate is provided consisting of a conductive substrate support, a first thin film or layer of gold, platinum or selenium deposited on said support and a second photoconductive insulating film or layer of selenium deposited on said first layer. The second film or layer consisting essentially of selenium is deposited at a temperature in the range about 20°C – 40°C. The gold or platinum of said first film can be deposited by vacuum deposition or plating on said support and the selenium of said first film is deposited at a temperature in the range about 60°C – 75°C. The resulting plate when employed in a repetitive electrostatic copying operation exhibits almost negligible residual potential.

3,775,110

METHOD FOR THE PRODUCTION OF LENTICULAR ELEMENTS

Friedrich Bestenreiner, Grunwald b. Munchen, and Reinhold Deml, Munchen, both of Germany, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 3, 1969, Ser. No. 830,073
Claims priority, application Germany, June 11, 1968, P 17 72 567.6
Int. Cl. G03c 5/04
U.S. Cl. 96—27 R 7 Claims

Lenticular optical elements are produced by exposing selected areas of a layer of photosensitive material to light whose intensity varies in accordance with a predetermined pattern. The thus exposed layer is thereupon stabilized by developing or rehalogenating.

3,775,111

STABILIZED BLEACHED SILVER HALIDE HOLOGRAMS

Scott L. Norman, Des Plaines, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 4, 1971, Ser. No. 186,466
Int. Cl. G03c 5/04, 5/32, 5/38
U.S. Cl. 96—27 H 7 Claims

Silver halide phase holograms stabilized to radiation at selected wavelengths are prepared by exposure of silver halide photographic emulsion plates to laser radiation at preselected wavelengths to form a holographic pattern of metallic silver in said emulsion, developing said photographic emulsion plate, converting residual silver to silver halide by conventional bleaching processes, and dyeing the bleached hologram with an organic dye to desensitize the silver halide against decomposition by radiation at the preselected wavelengths without substantial absorbtion of the radiation at that wavelength. Stabilization of bleached silver halide holograms to argon ion laser radiation at 4,880 and 5,145 angstroms is disclosed.

3,775,112

PHOTOPOLYMERIZABLE MATERIAL CONTAINING STARCH AND PROCESS OF USING

Michael J. Alsup, and Alec N. Mutz, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 10, 1971, Ser. No. 151,984
Int. Cl. G03c 5/04
U.S. Cl. 96—28 5 Claims

A photosensitive element useful in transfer processes for the preparation of images, in particular multilayer images such as color proofs, contains in the light sensitive layer small, irregular-shaped particles, such as corn starch.

3,775,113

POSITIVE IMAGE TRANSFER

James A. Bonham, and Panayotis C. Petrellis, both of Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1972, Ser. No. 224,950
Int. Cl. G03c 11/12
U.S. Cl. 96—28 9 Claims

A process for transferring positive images of an original to receptor surfaces is provided. The process utilizes a transfer sheet comprising a flexible, dimensionally stable film support bearing a thermoplastic photosolubilizable layer which, after imagewise exposure and development to remove exposed areas, may be applied to a receptor surface to transfer a positive image of the original to the receptor.

3,775,114

PHOTOSENSITIVE SILVER HALIDE LAYERS AND PROCESS

Robert F. Gracia, Scituate; Richard A. Laughrey, Woburn, and Paul F. Tuohey, Quincy, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 744,631, July 15, 1968, abandoned, Continuation-in-part of Ser. No. 862,912, Oct. 1, 1969. This application June 12, 1970, Ser. No. 45,927
Claims priority, application Great Britain, July 14, 1969, 35,290/69
Int. Cl. G03f 7/02
U.S. Cl. 96—33 24 Claims

This disclosure concerns a process of producing photographic images by photoexposing a photosensitive silver halide layer of less than two microns thickness and subsequently physically developing the exposed layer to obtain a visible image. The preferred silver halide layers are of a thickness of less than one micron. The resulting photo-images are characterized by extremely high resolution, especially resolution required for holographic imaging and reproduction. Additionally, the images are adherently bonded to the film substrate.

3,775,115

METHOD OF PREPARING LITHOGRAPHIC PRINTING PLATE

Jack L. Sorkin, University Heights; Percy M. Kay, Chesterland, and Lawrence H. Frischkorn, Bratenahl, all of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed July 14, 1971, Ser. No. 162,708
Int. Cl. G03f 7/02; G03g 5/00, 7/00
U.S. Cl. 96—33 7 Claims

The printing plate and process for preparing the same described herein comprises a printing plate suitable for dry lithography having in the non-image producing areas an ink repellent coating such as a cured elastomeric organopolysiloxane and in the ink receptive image producing areas the same cured elastomeric organopolysiloxane coated with a fused toner, and having under said organopolysiloxane layer a base which may be of various materials. In a preferred process for preparing this printing plate, the base is an electrophotographic sheet which is given an electrostatic charge which serves as the means for attracting and holding the toner imposed on the polysiloxane layer until the toner image is fused onto the polysiloxane layer. In another modification an image of toner is imprinted on one base and then the toner image is superimposed and transferred to the organopolysiloxane coating and the toner fused to make it ink receptive.

3,775,116
METHOD FOR MAKING A PHOSPHOR SCREEN OF A CATHODE-RAY TUBE

Takeo Takemoto, and Yoshifumi Tomita, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1971, Ser. No. 204,020
Claims priority, application Japan, Dec. 4, 1970, 45/106845
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **6 Claims**

A layer through which light can pass subject to some attenuation is provided on that surface of a shadow mask which opposes to a phosphor screen within a cathode-ray tube, a photosensitive layer is provided on the first-mentioned layer, light-permeating apertures smaller than the light-permeating openings of the shadow mask are formed in the photosensitive layer, and phosphor dots are formed using the assembly thus obtained. Thereby reduction of the manufacturing cost of CRT's and high improvements in the performance of the same are accomplished.

3,775,117
PROCESS FOR SELECTIVE METALLIZATION OF INSULATING MATERIAL BODIES

Herbert Hoffman; Erich Rosshaupter, both of Muenchen, and Arthur Weitze, Pullach, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 853,052, Aug. 26, 1969, abandoned. This application July 13, 1971, Ser. No. 162,228
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.2 **12 Claims**

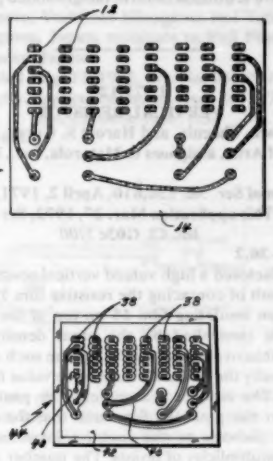
Process for the production of fine-line circuit plates or the like having selected sharply defined metallized areas on an insulating base and the metallized plate so-produced. The process generally comprises applying a layer of a photoresist onto the insulating base and then applying a layer of a light and developer permeable, metallizing ink repellant material (i.e., a silicon oil in xylene) onto the photoresist layer. The coated base is then selectively exposed to light, rendering the exposed photoresist areas chemically changed in its solubility to a suitable developer. The exposed coated base is then contacted with the developer and the soluble photoresist areas are removed, along with the superimposed areas of repellant material supported thereby. The resultant base, having selected areas completely exposed and other areas covered with the non-exposed photoresist and repellant material, is then contacted with a metallizing ink (i.e., an aqueous solution of lithium polymolybdate) and the resultant areas of metallizing ink on the base are air dried. Next, the partially metallized base is annealed at temperatures sufficient to completely remove the remaining photoresist and repellant materials and burn-in the metal on the base.

3,775,118
PHOTOMECHANICAL METHOD OF PRODUCING GROUNDED PRINTED CIRCUITS

Stuart A. Bemis, 176 High St., Winchester, Mass.

Filed Dec. 14, 1971, Ser. No. 207,750
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.2 **2 Claims**

A photomechanical method of producing a grounded printed circuit utilizing an ungrounded circuit negative, a base film and a transparent sheet sandwiched therebetween. This film package is mounted on a turntable and exposed to a light source while the turntable is being rotated. Development of the exposed base film produces a negative mask. This negative mask is used in conjunction with the original ungrounded circuit negative to produce a composite positive which contains the required ground plane and upon which any further terminal grounding can be made. The resultant grounded composite negative is utilized to form the grounded printed circuit.

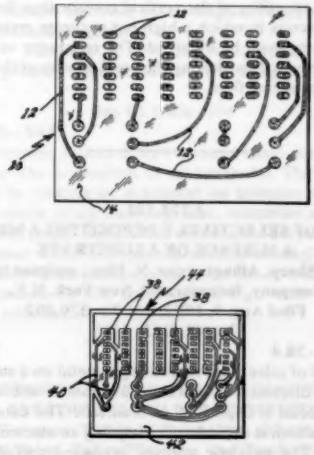


3,775,119
PHOTOMECHANICAL METHOD OF PRODUCING GROUNDED PRINTED CIRCUITS

Stuart A. Bemis, Winchester, Mass., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Dec. 14, 1971, Ser. No. 207,901
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.2 **1 Claim**

A photomechanical method of producing a grounded printed circuit utilizes an ungrounded circuit negative, a base film and a diffuser sandwiched therebetween to produce a negative mask having a spread image thereon. This negative mask is used in conjunction with the original ungrounded cir-



cuit negative to produce a composite positive which contains the required ground plane and upon which any further terminal grounding can be made. The resultant grounded composite negative is utilized to form the grounded printed circuit.

3,775,120

VERTICAL RESISTOR

James R. Black, Phoenix, and Harold S. Gurev, Paradise, Valley, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 130,610, April 2, 1971, Pat. No. 3,680,028. This application Mar. 27, 1972, Ser. No. 238,272
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 6 Claims

There is disclosed a high valued vertical resistor whose high value is a result of contacing the resistive film 10 through pinholes 16 in an insulating film 15 on top of the resistive film. The value is controlled by the areal density of pinholes through the thin overlaying insulating film such that the higher the areal density the lower the resistance value for the particular resistor. The resistor is completed by providing a metal layer 20 over the pinholed film such that the metal extends through the pinholes to the resistive layer making contact thereto at a multiplicity of points. The number and size of the contacts made to the resistive layer as well as the resistivity and thickness of the resistive layer controls the total resistance value of the resistor. The holes in the thin insulating film are formed and the hole size and number controlled by one of three methods involving the use of opaque particles, metal particles and porous photorresists as masks for etching the thin insulating film.

In one embodiment metallization fills the pinholes in the thin insulating layer so as to provide a multiplicity of contacts to the resistive layer which are spaced and insulated one from another. The structure in this case can be used as a sensing device for determinging a planar contact area of an electrically conducting structure contiguous to the top surface of the resistor, the contact area varying in an inverse manner with the resistance of the resistor. The structure fabricated without continuous overlaying metallization can also be used as a sensing device for sensing the contact area of a resilient structure having a conductive film on the outside thereof.

The greatest utility of the vertical resistor thus formed is in electrical circuits in which a high but accurate resistive value for the resistor must be obtained. The resistance value of the resistor is provided by altering the areal density of the pinholes in the thin insulating film.

3,775,121

METHOD OF SELECTIVELY DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

Donald Jex Sharp, Albuquerque, N. Mex., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,092
Int. Cl. G03c 5/00
U.S. Cl. 96—38.4 12 Claims

A method of selectively depositing a metal on a surface of a substrate is disclosed. A suitable substrate is selected and a catalytic species is deposited on a surface The catalytic species in one which is capable of catalyzing an electroless metal deposition. The catalytic species deposited surface is then poisoned by a suitable poison whereby the catalytic species is rendered non-catalytic. The poisoned surface is then selectively exposed to a source of ultraviolet radiation whereby those portions of the surface exposed thereto are again rendered catalytic, i.e., the portions contain thereon species capable of participating in an electroless metal deposition catalysis.

3,775,122

IMAGE PRODUCTION USING PHOTOSENSITIVE COMPOSITIONS OF NITRONE WHICH IS HEAT DEVELOPED

Sheldon Irwin Schlesinger, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 656,685, July 28, 1967, abandoned. This application Nov. 27, 1970, Ser. No. 93,414
Int. Cl. G03c 5/24
U.S. Cl. 96—48 HD 25 Claims

The use of photosensitive nitrones in an image-formation system, if desired with auxiliary compounds for intensifying the photolytically formed image or for improving the fixing of the image, wherein the image is fixed by the use of heat.

3,775,123

PHOTOSENSITIVE MATERIAL CONTAINING A P-PHENYLENEDIAMINE DERIVATIVE COLOR FORMER AND A HALOGENATED HYDROCARBON PHOTOACTIVATOR

Hiroshi Takano; Hitoshi Nakajima; Kenzo Harada, all of Saitama, and Yukio Miura, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Filed Nov. 1, 1971, Ser. No. 194,486
Claims priority, application Japan, Nov. 5, 1970, 45/96868
Int. Cl. G03c 1/52, 5/24
U.S. Cl. 96—48 R 13 Claims

A novel non-silver direct print-out photosensitive material is made from a mixture of a phenylenediamine derivative of a particular structure and an organic halide capable of discharging halogenated carbon radicals by irradiation of light. A binder and sensitizer are preferably added to this material. This photo-sensitive material is extremely excellent in resistance to oxidation and is stable before and after exposure to light. It is also excellent in resolving power, sensitivity, reproducibility of color, resistance to chemicals, etc. The present sensitive material is suitable for a photographic paper, a copying paper, a microfilm, phlography, planography or relief printing.

3,775,124

STABILIZING METHOD AND COMPOSITION FOR COLOR PHOTOGRAPHIC PROCESSING

Kazuo Shirasu; Mitsuo Ozawa, and Yasuhisa Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 14, 1972, Ser. No. 262,896
Claims priority, application Japan, June 14, 1971, 46/42385
Int. Cl. G03c 7/00
U.S. Cl. 96—56 8 Claims

A stable processing solution for improving the stability of color images of color photographic materials is disclosed. The processing solution contains pyrogallol-1,3-dimethyl ether.

3,775,125

SELENIUM COMPOUNDS

Enzo Piccotti, Gubbio, Italy, assignor to Ilford Limited, Ilford, England

Filed Sept. 28, 1971, Ser. No. 184,623
Claims priority, application Great Britain, Oct. 1, 1970, 46,800/70
Int. Cl. G03c 5/32, 7/00
U.S. Cl. 96—60 BF 10 Claims

This invention relates to new selenium compounds: Bis (1,2,4-triazol-3yl) diselenides, unsubstituted or substituted by alkyl, aralkyl or hydroxy groups. The diselenides are useful as bleach-fix accelerators in the processing of colour photographic material.

3,775,126

LIGHT-SENSITIVE ELEMENT COMPRISING A COATING LAYER CONTAINING A MIXTURE OF A CATIONIC PERFLUORINATED ALKYL AND AN ALKYLPHENOXYPOLY(PROPYLENE OXIDE)

John M. Babbitt, East Rochester, and James F. Houle, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 29, 1972, Ser. No. 230,450
Int. Cl. G03c 1/76; C09d 3/04
U.S. Cl. 96—67 19 Claims

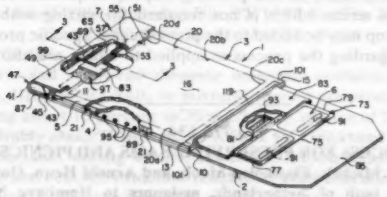
A combination of improved coatability plus better control of static electricity can result from using a mixture of (a) a certain type of cationic perfluorinated alkyl surfactant such as perfluorooctylsulfonamido-(N-propyl-3-N,N,N-trimethyl) ammonium iodide plus (b) a certain type of alkylphenoxypoly-(propylene oxide) such as p-nonylphenoxy decaglycidol as a coating aid in the application of fluid coatings upon the surface(s) of radiation sensitive film elements. The presence of a polymeric binder such as gelatin in the coating composition is desirable. Synergistic coating results are obtained when a coating composition containing the mixture is applied to light sensitive layers that are troublesome to simultaneously overcoat because they contain materials that are extremely surface active.

3,775,127

PHOTOGRAPHIC FILM UNIT

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,513
Int. Cl. G03c 1/48
U.S. Cl. 96—76 C 30 Claims



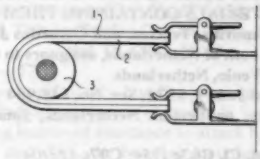
A photographic film unit of the self-processing type includes preregistered, superposed, photosensitive and process elements mounted on a underlying carrier sheet having a cooperating pod for supplying a fluid processing composition to the two elements and a trap for receiving and retaining any excess processing composition from the elements. The elements are easily separable from the carrier sheet, pod, and trap, the pod and trap remaining with the carrier sheet for convenient disposal after processing. The trap is formed by an extension of the carrier sheet that is folded around and separably coupled to the trailing end of the upper element. Moisture-sensitive cement is provided on an interior surface of the trailing ends of the two elements to couple those ends to each other upon application of compressive force urging the two ends together after the excess processing composition has passed between them, a spacing member being mounted on the carrier sheet beneath and parallel with those ends to assist the compressive force in urging them together. Moisture-sensitive cement is also provided on an interior surface of the trap to seal the trap closed upon application of compressive force after the excess processing composition has passed into it, a spacing member being mounted on the carrier sheet extension to assist the compressive force in closing the trap.

3,775,128

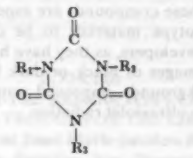
SILVER HALIDE EMULSION CONTAINING A TRIAZINE AS ANTIFOGGANT

Nobuo Yamamoto; Yoshisato Minagawa, and Tohru Sueyoshi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1972, Ser. No. 282,094
Claims priority, application Japan, Aug. 25, 1971, 46/64990
Int. Cl. G03c 1/48, 1/34
U.S. Cl. 96—76 R 5 Claims



A silver halide photographic light-sensitive material comprising a silver halide photographic emulsion containing a compound represented by the following general formula (I);



(I)

wherein R_1, R_2 and R_3 each represents a hydrogen atom or an alkyl group substituted by a hydroxyl group, wherein R_1, R_2 and R_3 are not simultaneously a hydrogen atom, is disclosed.

3,775,129

PHOTOGRAPHIC GELATINO SILVER HALIDE EMULSION

Geoffrey Michael Dodwell, Essex, England, assignor to Ilford Limited, Ilford, England

Filed Apr. 4, 1972, Ser. No. 241,066
Claims priority, application Great Britain, Apr. 16, 1971, 9,686/71
Int. Cl. G03c 1/04
U.S. Cl. 96—84 R 9 Claims

This invention relates to new photographic material and a process for the production of said material. The material is produced by coating on a support an aqueous silver halide emulsion which, in addition to gelatin, comprises a copolymer latex derived from I a monomer of the alkyl acrylate type and II a monomer which is a hydroxy substituted alkyl acrylate or methacrylate. With the composition of this invention the difficulties caused by the presence of, e.g., salts of divalent metals an substantially eliminated.

3,775,130

PHOTOSENSITIVE MATERIAL COMPRISING BENZOPYRYLIUM DYE SENSITIZER

Takamiti Enomoto; Toshiyuki Kawanishi; Akiyoshi Yasumori; Tsuyoshi Shiga; Yujiro Hirosawa, and Tomio Kubota, all of Tokyo, Japan, assignors to Ricoh, Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,743
Claims priority, application Japan, Dec. 28, 1970, 45/125987
Int. Cl. G03c 1/70
U.S. Cl. 96—90 R 6 Claims

A photosensitive material for producing a photographic recording material, comprising a resinous binder solution con-

taining dispersed therein a photo-polymerizable N-vinyl monomer, a photo-active agent and a dye sensitizer, said dye sensitizer consisting essentially of a salt selected from the group consisting of (1) a benzopyrylium salt and (2) a double complex salt consisting essentially of said benzopyrylium salt and a decolorized derivative of said benzopyrylium salt.

3,775,131

DIAZONIUM COMPOUNDS AND DIAZOTYPE MATERIALS CONTAINING THEM

Mathieu J. M. Hendriks, Tegelen, and Gerardus J. Crommentuyn, Lottum, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed June 1, 1971, Ser. No. 148,954

Claims priority, application Netherlands, June 19, 1970, 7009028

Int. Cl. G03c *1/54*; C07c *113/04*

U.S. Cl. 96—91 R **6 Claims**

New light-sensitive benzene diazonium compounds are provided, which have a halogen atom in an ortho position relative to the diazonium group, an alkylthio in meta position and a dialkyl, alkylcycloalkyl or alkylaralkyl tertiary amino group in para position. These compounds are especially useful in one-component diazotype materials to be developed by liquid phloroglucinol developers, as they have high coupling activity and they form images of black or dark brown azo dyestuffs having light backgrounds, improved water fastness and high absorptiveness to ultraviolet radiation.

3,775,132

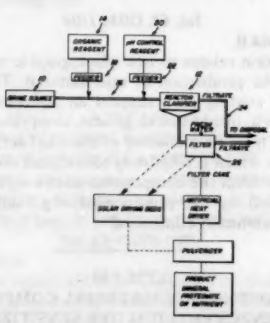
PRECIPITATION OF METAL PROTEINATES FROM BRINES BY BASE-ACID-BASE HYDROLYSIS

Albert Z. Richards, Jr., Salt Lake City, Utah, assignor to Key Minerals Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 787,147, Dec. 26, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,087

Int. Cl. A23k *1/175*; C05f *11/00*

U.S. Cl. 426—364 **7 Claims**



An improved method for the production of metal proteinates from an aqueous slurry of a proteinaceous precipitating reagent and a mineral source material such as a natural or synthetic brine, and/or from a reaction of dry salts mixed directly with a proteinaceous precipitating reagent known as the moist paste method, and wherein the precipitating reagent, in both cases is made by the base-acid-base hydrolysis of a protein-containing substance.

3,775,133

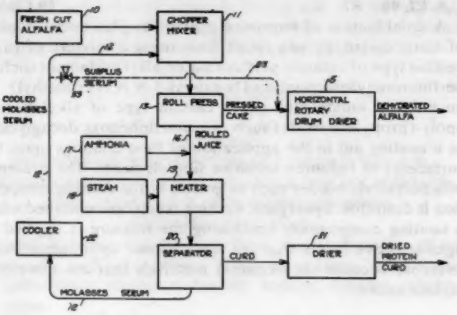
FRACTIONATION OF ALFALFA WETTED WITH MOLASSES SERUM

William R. Batley, Jr., P.O. Box 216, Brawley, Calif.

Filed Aug. 2, 1971, Ser. No. 167,901

Int. Cl. A23k *1/02*

U.S. Cl. 426—378 **12 Claims**



A process for fractionating leafy green crops is disclosed. This process involves the separation of at least one valuable constitutent from the crop and preferably comprises the production of a dehydrated green crop together with one or more valuable by-products. The process includes a pressing or squeezing of the green crop which has been mixed with molasses serum which is a by-product of the operation. The pressed crop may then be dehydrated by normal methods. The rolled juice which is expelled from the wetted squeezed crop is then treated to coagulate a valuable protein therefrom and the remaining liquid is a molasses serum which is recycled to the green crop prior to the pressing step. That portion of the molasses serum which is not required for mixing with the green crop may be added to the pressed cake. Specific process steps regarding the process as applied to alfalfa are also disclosed.

3,775,134

PROCESS FOR PRESERVING HAMS AND PICNICS

Paul W. Michels, Plasmolen-Mook, and Arnold Heun, Oosterbeek, both of Netherlands, assignors to Homburg N.V., Cuyk, Netherlands

Filed June 20, 1969, Ser. No. 835,235

Claims priority, application Netherlands, June 28, 1968, 6809250

Int. Cl. A23b *1/00, 1/02*

U.S. Cl. 426—281 **11 Claims**

A process for preserving hams and picnics, wherein brine is injected into hams or picnics in the deboned or non-deboned state. After the brine injection the hams or picnics are placed in a container and subjected therein to a continuous or intermittent agitating movement. Finally they are canned in pickled and deboned condition.

3,775,135

NON-FERROUS LITHOGRAPHIC PRINTING PLATE GLASSING COMPOSITION

James E. Harper, 6040 Haverhill St., Oxon Hill, Md.

Division of Ser. No. 819,110, April 24, 1969, Pat. No. 3,696,746. This application May 4, 1972, Ser. No. 250,227

Int. Cl. C09d *5/20*; C09k *3/00, 3/18*

U.S. Cl. 106—2 **3 Claims**

Non-ferrous lithographic printing plates, and especially those in which the hydrophobic image areas are constituted by photosensitive polymers, are desensitized by application to the

metal surface of the developed plate of an aqueous desensitizing solution comprising a phosphate glass such as sodium hexametaphosphate, preferably in admixture with a fluoride salt, such as sodium fluoride. The aqueous composition is maintained at a pH in the range of pH 5-7 by a water-soluble phosphorus acid, such as phosphoric acid. The treatment can be performed at room temperature and permits the hydrophylic areas of the printing plate to be maintained upon storage without special protection. The treatment can also be used as a fountain solution in a press fountain.

3,775,136

CALCIUM SODIUM ALUMINO DISILICATE FOAM

William H. Flank, Broomall; James E. McEvoy, Springfield, both of Pa., and John R. Stuart, deceased, late of Brookhaven, Pa. (by Clara M. Stuart, successor), assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

Continuation of Ser. No. 693,733, Dec. 27, 1967, Pat. No. 3,574,647. This application Jan. 25, 1971, Ser. No. 109,638The portion of the term of this patent subsequent to Apr. 13, 1988, has been disclaimed.

Int. Cl. C04b *33/00*

U.S. Cl. 106—40 1 Claim

A zeolite sodium aluminodisilicate, such as prepared by refluxing meta kaolin in 10% NaOH solution, is at least 50 percent ion exchanged to the calcium form, which is heated at 900°–1150°C. for several minutes to provide a non-zeolitic crystalline low density calcium sodium aluminodisilicate foam. Insulation panels can be made from such unique calcium sodium aluminodisilicate foam.

3,775,137

REFRACTORY DIBORIDE MATERIALS

Edward V. Clougherty, West Roxbury; Lawrence Kaufman, Brookline, both of Mass., and David Kalish, Atlanta, Ga., assignors to Man-Labs, Incorporated, Cambridge, Mass.

Continuation-in-part of Ser. No. 746,279, July 22, 1968, abandoned. This application Dec. 22, 1971, Ser. No. 211,078

Int. Cl. C04b *35/56*, *35/58*; C22c *29/00*

U.S. Cl. 106—44 2 Claims

New and improved diboride materials containing TiB_2, ZrB_2, HfB_2, NbB_2, TaB_2 or mixtures thereof are produced by adding about 10 percent to 35 percent by volume of SiC, and preferably about 20 percent by volume SiC. Improved properties include, among others, lower fabrication temperature, grain size control, oxidation resistance, mechanical integrity, strength to density ratio, thermal stress resistance, and the like.

3,775,138

REFRACTORY DIBORIDE MATERIALS

Edward V. Clougherty, 20 Pleasant Valley Cir., West Roxbury, Mass., and David Kalish, 2716 Ridgewood Rd., N.W., Atlanta, Ga.

Continuation-in-part of Ser. No. 728,055, May 9, 1968, abandoned. This application Dec. 22, 1971, Ser. No. 211,081

Int. Cl. C04b *35/52*, *35/56*, *35/58*

U.S. Cl. 106—44 13 Claims

New and improved diboride materials containing TiB_2, ZrB_2, HfB_2 or others are produced by adding about 15 percent to 50 percent by volume of SiC and C. Carbon is included in an amount between about 2 percent and 40 percent, preferably about 5 percent to about 30 percent and SiC between about 10 percent and about 45 percent, preferably about 15 percent to about 30 percent. Improved properties include, among others, lower fabrication temperature, grain size control, oxidation resistance, improved machinability, corrosion resistance to gases containing fluoride, strength, thermal stress resistance and the like; improvement is gained not only in comparison with the diboride itself, but also in comparison with the diboride and either SiC or C without the other.

3,775,139

NON-FERROUS REFRACTORY COMPOSITION HAVING IMPROVED RESISTANCE TO MOLTEN NON-FERROUS METALS AND SLAGS

Elton S. Gamble, Trumbull, and Warren S. Peterson, Guilford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 674,634, Oct. 11, 1967, abandoned. This application Oct. 26, 1970, Ser. No. 84,122

Int. Cl. C04b *35/48*

U.S. Cl. 106—57 9 Claims

An inorganic refractory bonding material is provided for bonding refractory oxides or compounds to form refractory bodies having improved resistance to attack by molten nonferrous metals and slags, the bonding material contains a nonbasic metallic oxide, or compound having a melting point above 2,500°F; metallic aluminum, zirconium oxide, or aluminum oxide; a bonding agent; and optionally a suspending agent, and a gelling agent.

3,775,140

SUBSTANCE FOR THE REFRACTORY LINING OF PIG IRON TROUGHS OR THE LIKE

Reier Visser, Driehuis; Jozef Marie Jacobus Bormans, Velsen; Wilhelmus Petrus Josephus Van Haaren, Jmuiden, and Douwe Meindert Homan, Driehuis, all of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V., Ijmuiden, Netherlands

Filed Oct. 5, 1970, Ser. No. 78,231

Claims priority, application Netherlands, Oct. 6, 1969, 6915096

Int. Cl. C04b *35/02*

U.S. Cl. 106—58 1 Claim

A refractory lining substance for pig iron troughs and the like contains (1) granular refractory material preferably about 30% of which is a 1–3 mm sieve fraction, the remainder being finer, (2) tar 8–15%, preferably 9–12%, preferably containing over 70% pitch and 9–11% C_2 resins, and preferably having a viscosity of less than 8,000 cp at 20°C; and (3) has at least 75% of the mass consisting of magnesite. It (4) preferably contains Cr_2O_3, and (5) may contain ground coal (anthracite and/or bituminous coal and/or coke) from 0–15%, preferably less than 5%, more preferably less than 1%. The processes for making and using same, and troughs lined therewith are also disclosed.

3,775,141

HARDENED INORGANIC REFRACTORY FIBROUS COMPOSITIONS

Verne Wesley Weidman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 3, 1972, Ser. No. 249,969

Int. Cl. C04b *35/10*

U.S. Cl. 106—65 13 Claims

Inorganic fibers such as mineral wool are bonded in a coherent mass with a binder such as colloidal positively charged particles having a silica core and a coating of a polyvalent metal-oxygen compound. The binder is flocculated from solution onto the fibers by agents such as attapulgite or hectorite. A flocculated and bonded wet compact of this material is impregnated with negatively charged colloidal silica to produce a hard body.

3,775,142

IMPROVED CERAMIC COMPOSITIONS FOR HIGH STABILITY CAPACITORS

Rolland R. Roup, Alhambra, Calif., assignor to Solid State Dielectrics, Inc., Burbank, Calif.

Filed Jan. 26, 1971, Ser. No. 109,984
Int. Cl. C04b *35/50, 35/46*
U.S. Cl. 106—73.31 **8 Claims**

A ceramic composition useful in forming capacitors and having the following composition expressed in mole percent of the metal oxides present:

- neodymium oxide - about 12 to about 20 mole percent;
- barium oxide - about 12 to about 20 mole percent;
- titanium oxide - about 60 to about 70 mole percent;
- bismuth oxide - about 1.5 to about 5 mole percent;
- zirconium oxide - 0 to about 5 mole percent;
- stannic oxide - 0 to about 5 mole percent;
- calcium oxide and/or strontium oxide - 0 to about 10 mole percent
- rare earth oxides other than neodymium oxide - ranging up to about one mole percent but preferably less than about 0.6 mole percent;
- titanium oxide + stannic oxide + zirconium oxide - about 60 to 70 mole percent, and
- barium oxide + calcium oxide + strontium oxide - about 12 to about 25 mole percent.

A dense, substantially non-porous, ceramic dielectric material fired at a suitable temperature within the range of about 1220°C to about 1300°C., having a K value of about 55 to about 90, a temperature coefficient of dielectric constant (TC) of about −100 to about +100 × 10^{-6}/°C, a % D.F. less than 0.1, and an insulation resistance corresponding to values of at least about 200 ohm-farads ranging up to about 40,000 or more ohm-farads at 125°C.

3,775,143

METHOD OF PRODUCING STRESSING CEMENT

Viktor Vasilievich Mikhailov, ulitsa Chkalova, 25, kv. 14; Semen Lvovich Litver, Bolshaya Pirogovskaya ulitsa, 37/43, korpus A, kv. 32; Alexei Nikolaevich Popov, Belyaevo-Bogorodskoe, kvartal 49, korpus 32, kv. 57, and Valentina Alexandrovna Popova, Belyaevo-Bogovodskoe, kvartal 50, korpus 43, kv. 24, all of Moscow, U.S.S.R.

Continuation of Ser. No. 35,565, May 7, 1970, abandoned. This application May 17, 1972, Ser. No. 254,314
Int. Cl. C04b *7/02*
U.S. Cl. 106—89 **1 Claim**

A stressing cement is produced by mixing 58–62% by weight of Portland cement with an expanding component taken in an amount of 38–42% by weight. The expanding component consists of calcium sulphate, calcium oxide and an aluminate-containing material such as alumina cement or calcium hydroaluminate.

3,775,144

COOKED FLOUR-CONTAINING CORRUGATED PAPERBOARD ADHESIVES AND USE THEREOF

Franklyn O. Ware, Atchison, and Alan M. Hill, Topeka, both of Kans., assignors to Lawrence Paper Company, Lawrence, Kans.

Filed May 7, 1971, Ser. No. 141,198
Int. Cl. C08b *25/02;* **C08h** *7/00*
U.S. Cl. 106—150 **13 Claims**

An improved, viscosity-stable cooked flour-containing Stein-Hall type corrugated paperboard adhesive having an uncooked slurry portion and a cooked paste portion as a carrier therefor wherein the slurry portion comprises an amount sufficient to provide the requisite tack to the mixture of a smooth, stable homogeneous colloidal co-solution, substantially free of undissolved fiber, of both the protein and starch fractions of a proteinaceous grain flour, the protein fraction being substantially non-degraded and the starch fraction being essentially a chemically unmodified starch or as molecular weight reduced starch, which is chemically unmodified, the resultant adhesive being viscosity-stable with substantially higher tack than corresponding normally gellable conventional adhesives of the same flour content.

3,775,145

CORRUGATED PAPERBOARD ADHESIVE

Franklyn O. Ware, and Alan M. Hill, both of Lawrence, Kans., assignors to Lawrence Paper Company, Lawrence, Kans.

Continuation of Ser. No. 141,198, May 7, 1971
Filed Sept. 23, 1971, Ser. No. 183,218
Int. Cl. C08b *25/02;* **C08h** *7/00*
U.S. Cl. 106—150 **19 Claims**

Novel viscosity stable corrugating adhesives having a carrier portion, e.g., cooked starch paste or a cooked flour paste having similar viscosity and flow characteristics, and a slurry portion containing flour having a particle size less than 100 mesh, and containing from 0.25 – 1.8 borax and 0.5 – 3.0 caustic, calculated on total solids, in amounts sufficient to provide the requisite initial tack and desired gel point to the adhesive but less than that which renders the adhesives viscosity unstable.

3,775,146

HOT MELT ADHESIVE COMPOSITIONS

Erick Reckziegel, Dusseldorf-Eller, and Wolfgang Mehmel, Duisburg, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed Mar. 4, 1971, Ser. No. 121,216
Claims priority, application Germany, Mar. 13, 1970, P 20 11 971.5
Int. Cl. C08h *11/04*
U.S. Cl. 106—218 **4 Claims**

A hot melt adhesive composition capable of emulsification in water comprising (1) from 35 to 95 percent by weight of natural resins selected from the group consisting of tall oil resins and colophony resins, (2) from 5 to 30 percent by weight of a surface-active polyethylene oxide adduct having a Griffin HLB value of from 10 to 20, (3) from zero to 30 percent by weight of ethylene/vinyl acetate copolymers having from 25 to 45 mol percent of vinyl acetate, and (4) from zero to 25 percent by weight of high-boiling hydrocarbons.

3,775,147

WHITE MULCH COMPOSITION

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 3,531, Jan. 16, 1970, abandoned. This application Dec. 30, 1971, Ser. No. 214,449
Int. Cl. C08h *9/08*
U.S. Cl. 106—271 **1 Claim**

A white mulch is provided comprised of from 10 to 60 parts of a whitening agent, from three to 11 parts of a binder, from zero to one part of a stabilizer, and from 87 to 28 parts of water.

The white mulch is useful for maintaining soil at a lower temperature during germination of crops.

3,775,148

PIGMENT COMPOSITIONS

Gordon Frank Bradley, Paisley, Scotland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed May 7, 1971, Ser. No. 141,385

Claims priority, application Great Britain, July 16, 1970, 34,428/70; July 16, 1970, 34,429/70

Int. Cl. G08h *17/44*

U.S. Cl. 106—288 Q 110 Claims

In a process of the preparation of a diarylide pigment composition by coupling a tetrazotized pigment benzidine with a pigment coupling agent and incorporating in the pigment a watersoluble dyestuff, preferably diarylide dyestuff, the step of subjecting the obtained pigment composition to a conventional solvent treatment, of additionally incorporating in the pigment composition a fatty alcohol, diol or polyol containing from eight to 22 carbon atoms or an aliphatic amine, amine salt or amine oxide containing from one to 20 carbon atoms, and any combination thereof and the pigment composition obtained by the process.

3,775,149

PREPARATION OF PIGMENTS

Robert Langley, Newton Mearns, and William Gill Warwick, Bridge of Weir, both of Scotland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 18, 1971, Ser. No. 200,073

Claims priority, application Great Britain, Nov. 20, 1970, 56,899/70

Int. Cl. C08j *1/48*

U.S. Cl. 106—308 Q 8 Claims

A process in which phthalocyanine pigment is produced at least 80 percent in the β-pigmentary form by grinding a dispersed suspension of crude pigment in aqueous medium, preferably with particulate grinding elements which are insoluble in the aqueous medium, containing from 5 to 10 percent of surface active agent until the pigment flocculates and the system is converted into a filterable paste and by recovering the pigmentary phthalocyanine from the paste by filtration, the filterable paste of the phthalocyanine pigment and the phthalocyanine pigment prepared by the process.

3,775,150

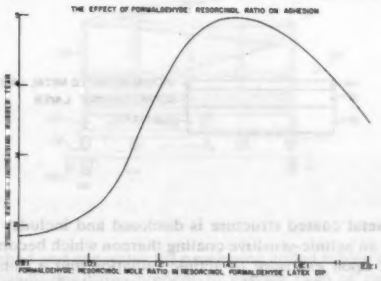
METHOD OF COATING POLYESTER FILAMENTS AND RESULTANT PRODUCT

Edward B. McClary, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 25,772, April 6, 1970, abandoned. This application Apr. 20, 1972, Ser. No. 246,085

Int. Cl. B32b *27/36*

U.S. Cl. 117—7 11 Claims


THE EFFECT OF FORMALDEHYDE: RESORCINOL RATIO ON ADHESION
FORMALDEHYDE: RESORCINOL MOLE RATIO IN RESORCINOL FORMALDEHYDE LATEX DIP

A process for producing an adhesive activated polyester reinforcing element and the product produced thereby, the process comprising disposing an uncured epoxy resin coating on essentially undrawn polyester fialents, drawing said filaments at least 1.2 times their length and then coating with a resorcinol-formaldehyde latex dip wherein the formaldehyde to resorcinol mole ratios are from 1.2:1 to 2:1. The resultant product is found to have improved adhesion for rubber.

3,775,151

PROCESS FOR PREPARING CHROMIZED FERROUS METAL SHEET MATERIAL AND THE RESULTANT ARTICLES

James N. Baker, McKees Rocks, Pa.; Richard A. Bird, Weirton, W. Va., and Glenn W. Bush, Coraopolis, Pa., assignors to National Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 833,189, June 13, 1969, abandoned. This application May 6, 1970, Ser. No. 35,252

Int. Cl. C23c *9/00*

U.S. Cl. 117—33 66 Claims

A noncompacted adherent coating containing a chromizing energizer and a particulate source of metallic chromium is formed on ferrous metal sheet material by applying chromium containing powder in a dry state on the sheet metal and causing the powder to adhere to the sheet metal, whereby the resultant coated sheet material is especially useful in preparing chromized sheet material. The process makes possible preparation of ferrous metal sheet material chromizing stock in high speed commercial coating lines and costs may be reduced substantially. In one variant, chromized sheet material is prepared by applying a halogen-containing energizer and a particulate source of metallic chromium on ferrous metal sheet material, forming an adherent, noncompacted coating thereon containing the energizer and the particulate source of chromium, assembling a plurality of layers of the coated sheet material into a chromizing pack, and subjecting the pack to a chromizing temperature in a protective atmosphere. In a preferred variant, an energizer is selected which has an adhesive characteristic under the process conditions, and it is used as the adhesive to form the adherent, non-compacted coating. In another variant, a binder which has an adhesive characteristic under the process conditions is used in forming the adherent coating. When desired, the adherent coating may be applied to only one surface of the sheet material, and both surfaces may be chromized without welding of adjacent layers or convolutions. The invention further provides the coated ferrous metal sheet material prepared by the coating process of the invention, chromizing packs prepared therefrom, and chromized ferrous metal sheet material prepared by the chromizing process of the invention.

3,775,152

PHOTOGRAPHIC SUBBING MATERIAL

Frederick J. Jacoby; Frederick L. Hamb, and Lewis C. Trent, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 865,184, Oct. 9, 1969, Pat. No. 3,658,541. This application Sept. 8, 1971, Ser. No. 178,835

Int. Cl. B44d *1/36;* C08d *13/16;* G03c *1/80*

U.S. Cl. 117—34 5 Claims

Solvent soluble carboxylated polyester subbing materials for photographic elements. An organic solvent soluble polyester is carboxylated by treatment, during the latter stages of polymerization, with an organic dianhydride to produce an organic solvent soluble carboxylated polyester. The solvent soluble carboxylated polyester is effectively used in subbing compositions, desirably containing attack solvent, e.g., coated onto a polyester photographic film support and has excellent adhesion both to the support and to conventional gelatin-cellulose ester subbing layers used to adhere a gelatino silver halide emulsion to the support.

3,775,153

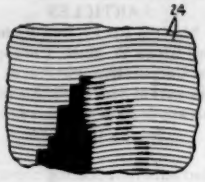
MIRRORED PICTURE

Hoyne E. Greenberg, Beverly Hills, Calif., and Max L. Wexler, Chicago, Ill., assignors to Hoyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 864,732, Oct. 8, 1969, Pat. No. 3,589,507. This application June 4, 1971, Ser. No. 149,893

Int. Cl. G02b 5/08

U.S. Cl. 117—35 R 1 Claim



A transparent plate having deposited on only selected areas thereof a pigmented material forming at least part of a picture, and a mirror-forming coating over the deposited pigmented material of each plate which coating forms a mirrored surface between the areas of each plate covered by said pigmented material. The deposit of pigmented material on the plate is deposited as spaced lines of such material, the width of which varies to produce a gradation of shading in the picture.

3,775,154

DECORATING GLASS-CERAMIC MATERIALS

Peter Grego, Wellsboro, Pa., and Joseph N. Panzarino, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 12, 1971, Ser. No. 171,342

Int. Cl. C03c 21/00, 17/26

U.S. Cl. 117—38 3 Claims

This invention relates to a method of decorating glass-ceramics by an ion-exchange staining method wherein a composition consisting essentially of silver salts, transition metal compounds, sulfur and bentonite is applied to the glass prior to ceramming, and the glass is subsequently decorated and converted to a glass-ceramic in a single heat treating operating involving a hold at temperatures of at least about 1,100°C.

3,775,155

TETRAKIS (HYDROXYMETHYL) PHOSPHONIUM CHLORIDE

Robert B. Eggenweiler, West Seneca, and James J. Duffy, Buffalo, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 4, 1971, Ser. No. 195,843

Int. Cl. B44d 1/48; C09k 3/28

U.S. Cl. 117—62.2 8 Claims

A process for imparting flame-retardant character to cellulosic containing material has been devised in which the cullolosic material is impregnated with an aqueous solution of a tetrakis(hydroxymethyl)phosphonium compound, preferably partially neutralized tetrakis(hydroxymethyl)phosphonium chloride, the impregnated material is at least partially dried, e.g., to about 5 to 25 percent by weight moisture retention, without fixation of the phosphonium compound on the material, the partially dried material is cooled and then treated with dry ammonia gas optionally in the presence of water vapor whereby the phosphonium compound is cured on the material and a fire-retardant character is imparted thereto.

3,775,156

METHOD OF FORMING COMPOSITE METAL STRIP

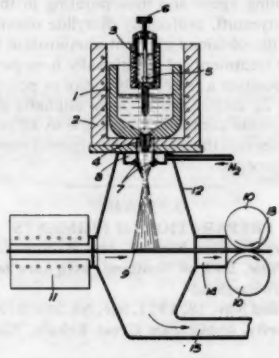
Alfred Richard Eric Singer, Swansea, Glamorgan, Wales, assignor to Vandervell Products Limited, Maidenhead, Berkshire, England

Filed June 16, 1971, Ser. No. 153,650

Claims priority, application Great Britain, June 20, 1970, 30,041/70; Oct. 14, 1970, 48,729/70

Int. Cl. C23c 7/00; B44d 1/44

U.S. Cl. 117—65.2 7 Claims



The specification discloses a method of forming a composite metal strip comprising a backing layer and a layer of two metals which, in liquid form, are immiscible or partially immiscible and having differing densities. The two metals are maintained in molten state in two crucibles each of which has a bottom outlet from which a stream of molten metal issues. The crucible containing the higher density metal is supported within the other crucible so that the stream of higher density metal passes through the lower density metal and issues concentrically with the stream of lower density metal to atomizing gas jets which atomize the streams of metal and direct a spray of the resulting particles onto a backing layer to which the particles adhere.

3,775,157

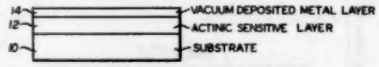
METAL COATED STRUCTURE

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn.

Filed Sept. 24, 1971, Ser. No. 183,482

Int. Cl. C23c 13/02

U.S. Cl. 117—71 R 15 Claims



A metal coated structure is disclosed and includes a substrate, an actinic-sensitive coating thereon which becomes adherent upon exposure to actinic radiation and a thin metal coating over the actinic-sensitive coating which will transmit actinic radiation for rendering the actinic-sensitive coating adherent to the substrate and the metal coating. After exposure to actinic radiation, the adhered metal coating is useful per se or provides a basis for further metal coatings such as electroless and electrolytic deposited metal coatings.

3,775,158

COMPOSITE ARTICLE CONTAINING AN ALPHA-OLEFIN HYDROCARBON COPOLYMER

George A. Gallagher, Media, Pa., and Henry C. Walter, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 793,633, Nov. 20, 1968, Division of Ser. No. 571,393, Aug. 10, 1968, which is a continuation-in-part of Ser. No. 359,441, April 13, 1964, abandoned. This application Oct. 18, 1971, Ser. No. 189,836

Int. Cl. C09j *3/12*; B32b *25/08*

U.S. Cl. 117—72 7 Claims

A composite article consisting of a cured chain-saturated copolymer of an alpha-monoolefin and a non-conjugated hydrocarbon diene which is adhered by a dried cured coating to a substrate such as a polyamide by a coating made from an aqueous dispersion containing a chlorosulfonated polyethylene and a resorcinol-formaldehyde type resin. If the substrate is a polyester the article needs a precoat.

ERRATUM

For Class 117—75 see:
Patent No. 3,774,703

3,775,159

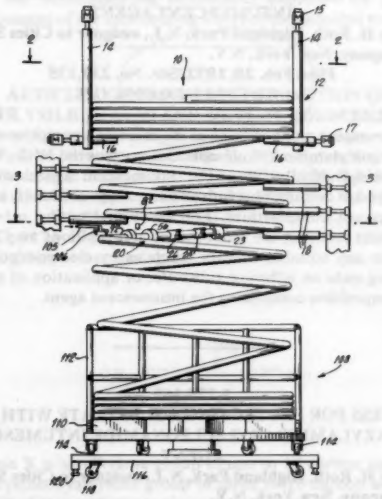
METHOD FOR PROCESSING COILED TUBING HAVING TURNS PREBENT TO VARYING RADII OF CURVATURE

George Main, Garfield Heights, and Robert E. Jahnke, Fairview Park, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 8,369, Feb. 3, 1970, Pat. No. 3,690,288. This application Nov. 30, 1971, Ser. No. 203,491

Int. Cl. B05c *11/12*, *5/02*

U.S. Cl. 117—75 7 Claims



Method and apparatus for processing coiled tubing or other material having turns prebent to varying radii of curvature without unbending the tubing. A coil of tubing is rotatably supported and the turns of tubing from the coil are sequentially separated axially of the coil. The axially separated tubing is guided into and through a processing station. The tubing is maintained on a predetermined path through the processing station by sensing deviation of the tubing from the predetermined path and then directing the tubing into the path in response to the sensed deviation. The trailing end of the tubing is sensed as it passes through the processing station, and further directing of the tubing is discontinued.

The natural fall of the coil is utilized by spacing the processing station from the apparatus for rotatably supporting the coil in order to reduce the mechanical effort of feeding the tubing through the processing station. The processing station additionally is set at an angle that coincides with the normal fall of the separated coil turns, further to facilitate the movement of the turns through the processing station. Tapered support rollers are utilized for supporting the coil prior to processing, the taper being such as to accomodate the difference in linear velocity of the tubing occasioned by the varying radii of curvature of the turns. The tubing is recoiled in a rotatable receiving drum spaced beneath the processing station. The processed tubing moves directly to the receiving drum without contact with any support or guiding structure to provide a minimum of handling after processing.

3,775,160

HYDROPHOBIC FILM COATED WITH ACID-MODIFIED BUTADIENE COPOLYMER

Margaret Loudon Clachan, Manningtree, and Gordon Edmund Alfred Pears, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 829,807, June 2, 1969, Pat. No. 3,615,556. This application May 11, 1971, Ser. No. 142,407

Claims priority, application Great Britain, June 24, 1968, 30,029/68. The portion of the term of this patent subsequent to Oct. 26, 1988, has been disclaimed.

Int. Cl. G03c *1/80*

U.S. Cl. 117—76 F 8 Claims

A hydrophobic film is coated with an ethylenically unsaturated acid-modified butadiene copolymer and a light sensitive gelatin-silver halide emulsion layer.

3,775,161

ELECTRIC LAMP ENVELOPE HAVING CLEAR PROTECTIVE COATING AND METHOD OF MAKING

William C. Martyny, Lyndhurst, and Ronald J. Olwert, Willoughby, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,779

Int. Cl. C03c *17/22*; H01j *61/35*

U.S. Cl. 117—94 7 Claims

An electric lamp envelope having an external protective coating which imparts lubricity for the purpose of improving durability and scratch resistance and which also imparts water repellency without reducing light transmission. Particularly useful for fluorescent lamps to reduce flaking or coating off of phosphor caused by vibration resulting from chattering of glass on glass during contact. The coating is very thin transparent film not more than two microns thick containing TiO_2 mixed with MgF_2, and may be formed by spraying a solution containing an organo titanate such as tetrabutyl titanate and magnesium fluoride on the glass at a temperature between 400° and 700° C.

3,775,162

LEATHER TREATMENT

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,269

Int. Cl. C09k *3/28*; C14c *9/00*

U.S. Cl. 117—93.1 DH 10 Claims

Leather having improved resistance to shrinkage on exposure to high temperatures as occasioned by flash fires is

produced by impregnating leather with a salt of a metal selected from the transition metals of the fourth and fifth periods of the Periodic Table and magnesium, such as nickel, chromium, cobalt, manganese and magnesium. Treatment of the impregnated leather with a linear addition polymer of trifluorovinyl chloride and treatment of impregnated or unimpregnated leather with microwaves results in an increase in the shrinkproof character of the leather.

3,775,163

METHOD FOR IMPROVING THE BOND BETWEEN GLASS FIBERS AND ELASTOMERIC MATERIALS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 29, 1968, Ser. No. 780,252

Int. Cl. B32b *17/10, 25/10*

U.S. Cl. 117—126 GB **4 Claims**

Glass fiber - elastomeric products wherein the glass fiber component is treated prior to combination with elastomeric material with a composition containing a resorcinol formaldehyde resin and one or more elastomeric materials in which the resorcinol formaldehyde resin has been subjected to air oxidation by bubbling air therethrough prior to application onto the glass fiber surfaces.

3,775,164

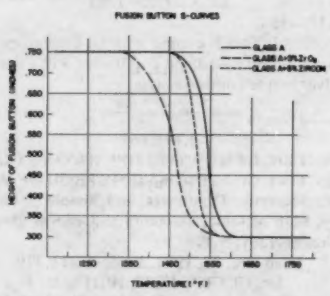
METHOD OF CONTROLLING CRYSTALLIZATION OF GLASS

Sidney L. Smith, Elyria, Ohio, and William A. Carlson, Rush, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 520,198, Jan. 12, 1966, abandoned. This application May 10, 1971, Ser. No. 141,831

Int. Cl. B32b *15/04*; **C03b** *29/00*

U.S. Cl. 117—129 **4 Claims**



In providing metal substrates with a protective coating of partially crystallized glass, crystalline refractory materials are added to the crystallizable glass frit to retard the rate of crystallization in order to maintain the coating in a substantially amorphous condition during the firing of the glass coating so that substantially all crystals in the partially crystallized coating are formed during subsequent heat treating.

3,775,165

POLYMERS OF IMPROVED FLAME RETARDANCE

Freeman M. Young, deceased, late of Spartanburg, S.C. (by Mary M. Young, administratrix), and Michael V. Lock, Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C., by said Lock

Continuation-in-part of Ser. No. 854,777, Sept. 2, 1969, abandoned. This application July 19, 1971, Ser. No. 164,011

Int. Cl. C08g *51/58*

U.S. Cl. 117—136 **13 Claims**

A polyester or polypropylene polymer containing a halogenated aromatic carboxylic acid ester. The polymers prepared in this manner exhibit improved flame retardant properties.

3,775,166

PROCESS FOR PROTECTING A SUBSTRATE WITH A SULFOGUANIDINE INTUMESCENT COMPOSITION

Shirley H. Roth, Highland Park, and Joseph Green, East Brunswick, both of N.J., assignors to Cities Service Company, New York, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,310

Int. Cl. C09d *1/00*

U.S. Cl. 117—136 **1 Claim**

A process for protecting a substrate from heat and fire with an intumescent composition which comprises sulfaguanidine, i.e., p-aminobenzenesulfonylguanidine, as the intumescent agent. The sulfaguanidine may be employed in conjunction with additives conventionally used in intumescent compositions.

3,775,167

PROCESS FOR PROTECTING A SUBSTRATE WITH AN N4-PYRIDYLAMINOARYLSULFONAMIDE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,134

Int. Cl. C09d *5/18*; **C09k** *3/28*

U.S. Cl. 117—136 **6 Claims**

Intumescent compositions of the invention comprise certain N^4-pyridylaminoarylsulfonamides, such as the N^4-2-, 3-, and 4-pyridylsulfanilamides. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied in any suitable manner, such as by electrodeposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,775,168

PROCESS FOR PROTECTING A SUBSTRATE WITH AN N^4-PYRIMIDYLAMINO-ARYLSULFONAMIDE INTUMERCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,135

Int. Cl. C09d *5/18*; **C09k** *3/28*

U.S. Cl. 117—136 **7 Claims**

Intumescent compositions of the invention comprise certain N^4-pyrimidylaminoarylsulfonamides, such as the N^4-2-, 4-, and 5-pyrimidylsulfanilamides. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied in any suitable manner, such as by electrodeposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,775,169

PROCESS FOR PROTECTING A SUBSTRATE WITH AN N^4-PYRAZYLAMINOARYLSULFONAMIDE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,136

Int. Cl. C09d *5/18*; **C09k** *3/28*

U.S. Cl. 117—136 **5 Claims**

Intumescent compositions of the invention comprise certain N^4-pyrazylaminoarylsulfonamides, such as N^4-2-pyrazylsulfanilamide and derivatives thereof. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may

be applied to the substrate in any suitable manner, such as by electrodeposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,775,170

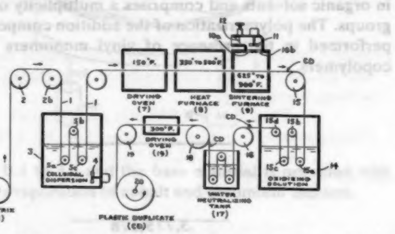
PLASTIC DUPLICATE OF CELLULOSIC OR PROTEINACEOUS MATERIAL, ARTICLE OR OBJECT

Solomon Rosenblatt, Nutley, N.J., assignor to Chemplast, Inc., East Newark, N.J.

Continuation of Ser. No. 870,994, Sept. 2, 1969, abandoned, which is a division of Ser. No. 433,631, Feb. 18, 1965, Pat. No. 3,497,256. This application June 25, 1971, Ser. No. 157,001

Int. Cl. B41m *5/24*; B29c *13/00*

U.S. Cl. 117—138.8 UA **7 Claims**



A plastic, material, article or object formed as a substantial duplicate; in high molecular weight polymeric material such as polyfluorocarbon resins, polyvinyl chloride and polyvinyidene chloride; of a matrix consisting of cellulosic and proteinacious materials by the process of impregnating a selected matrex with the selected high molecular weight polymeric material and carbonizing the matrix in a controlled concentration of oxygen at a temperature at least equal to the sintering temperature of the selected high molecular weight polymeric duplicating material until the duplicating material coalesces to form the self-supporting continuous duplicate by gradual replacement of the carbonizing fibers of the selected matrix.

3,775,171

ARTICLE COATED WITH COMPOSITION OF POLYSILICIC ACID AND SILYL-FLUOROOLEFIN

Matthew Edward Hermes, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 32,739, April 28, 1970, Pat. No. 3,714,214. This application Sept. 29, 1971, Ser. No. 184,947

Int. Cl. B32b *27/06*, *27/08*; B44d *5/00*

U.S. Cl. 117—138.8 F **14 Claims**

A silyl vinyl ether having the formula

$$CH_2{=}CHO(X)\overset{(R)_y}{\overset{|}{Si}}{-}(OR')_{(3-y)}$$

wherein X is an alkylene group of one to 10 carbon atoms, or an alkyleneoxyalkylene group of three to 16 carbon atoms, R is an alkyl group of one to six carbon atoms, y is 0, 1 or 2, and R′ is an alkyl group of 1 to 6 carbon atoms; silyl fluoroolefin polymers made by polymerizing the silyl vinyl ether with fluoroolefins, and, optionally, with other vinyl ethers and/or ethylene and/or propylene and/or fluorine-substituted vinyl ether; compositions containing polysilicic acid and silyl fluoroolefin polymer made by polymerizing the silyl vinyl ether with fluoroolefin, and, optionally, with other vinyl ethers; coating compositions containing a compatible solvent and the polysilicic acid/silyl fluoroolefin polymer composition; articles coated with the silyl-fluoroolefin polymer/polysilicic acid composition and a process for coating them; and polymers made by polymerizing the silyl vinyl ether with formaldehyde or trioxane and, optionally, with alkylene oxides and/or dioxolane and/or alkyl vinyl ethers.

3,775,172

PROCESS FOR FILM-COATING ARTICLES

Donald B. Clark, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 7, 1972, Ser. No. 216,241

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 UA **16 Claims**

A coating process wherein there is provided a wettable surface, particularly a paper sheet surface, and a coating solution of coacervate-forming materials in a state of incipient coacervation, wherein said coacervate-forming materials are capable of interacting to give a film-forming coacervate phase under the conditions that prevail at the surface to be coated and wherein said surface is contacted with said coating solution to cause the emergence from solution of the film-forming coacervate phase at said surface.

3,775,173

METHOD OF MAKING AN ELECTROLUMINESCENT MATERIAL

Ryoichi Yamamoto, Neyagawa; Nobumasa Ohoshima, Hirakata; Hisanao Sato, Ibaragi; Hiroshi Kawarada, Neyagawa, and Hiroshi Yamazoe, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed June 1, 1971, Ser. No. 148,752

Int. Cl. B44d *1/18*; C09r *1/12*

U.S. Cl. 117—201 **1 Claim**

The present invention relates to an improved method for making an electroluminescent material for D.C. excited EL, comprising: immersing a powder material selected from the group consisting of ZnS, solid solution of ZnS and ZnSe and solid solution of ZnS and CdS in an aqueous solution having a concentration of copper salt of 0.001 to 0.1 mol/l at a temperature of 20°C to 90°C for a time period of 3 to 180 minutes, said powder material being activated with an activating amount of a member selected from the group consisting of Mn, Er and Tb, thereafter washing said powder material with pure water, and then drying said powder material.

3,775,174

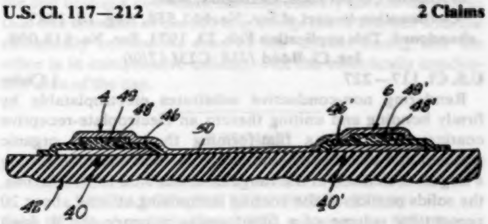
FILM DEPOSITED CIRCUITS AND DEVICES THEREFOR

Ronald G. Neale, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 773,013, Nov. 4, 1968, Pat. No. 3,629,863. This application May 20, 1971, Ser. No. 145,286

Int. Cl. H01l *11/00*

U.S. Cl. 117—212 **2 Claims**



A method comprising depositing on an insulating base conductive materials forming the passive elements of said electrical circuit and conductors extending thereto, and depositing on said insulating base at least one layer of semiconductor material forming said semiconductor device which electrically connects with at least one of said conductors.

3,775,175

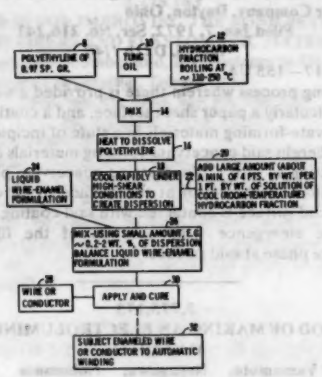
ENAMELED WIRE LUBRICATED WITH POLYETHYLENE

Jacques S. Merian, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 855,715, Sept. 5, 1969, abandoned. This application Mar. 15, 1972, Ser. No. 234,869

Int. Cl. H01b 3/30; B44d 1/42

U.S. Cl. 117—218 9 Claims


POLYETHYLENE OF 0.91 SP. GR.
TUNG OIL
HYDROCARBON FRACTION BOILING AT ~ 110-250 °C
MIX
HEAT TO DISSOLVE POLYETHYLENE
LIQUID WIRE-ENAMEL FORMULATION
COOL RAPIDLY UNDER HIGH-SHEAR CONDITIONS TO CREATE DISPERSION
ADD LARGE AMOUNT (ABOUT A MIN. OF 4 PTS. BY WT. PER 1 PT. BY WT. OF SOLUTION OF COOL (ROOM-TEMPERATURE) HYDROCARBON FRACTION
MIX-USING SMALL AMOUNT, E.G. ~ 0.2-2 WT. % OF DISPERSION BALANCE LIQUID WIRE-ENAMEL FORMULATION
WIRE OR CONDUCTOR
APPLY AND CURE
SUBJECT ENAMELED WIRE OR CONDUCTOR TO AUTOMATIC WINDING

A lubricated enameled wire is made by preparing a dispersion of polyethylene containing a volatile suspending agent, mixing the dispersion with a wire enamel, applying the mixture to a wire, and heating the mixture to a degree sufficient to evaporate the suspending agent and to cause the wire enamel to harden when cooled. The polyethylene migrates to the surface to form a slippery coating which is an integral part of the wire enamel. The coating protects the enamel from damage particularly when the wire is wound with automatic machinery. The enamel retains its original physical, electrical, thermal, and other properties and its ability to be bonded with varnish.

3,775,176

METHOD OF FORMING AN ELECTROPLATABLE MICROPOROUS FILM WITH EXPOSED METAL PARTICLES WITHIN THE PORES

Robert A. Cross, Harvard; Anthony J. Testa, Westwood, both of Mass., and Ralph N. Thompson, Pittsburgh, Pa., assignors to Amicon Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 661,555, Aug. 18, 1967, abandoned. This application Feb. 23, 1971, Ser. No. 118,090

Int. Cl. B44d 1/18; C23f 17/00

U.S. Cl. 117—227 1 Claim

Rendering non-conductive substrates electroplatable by firmly bonding and uniting thereto an electroplate-receptive coating comprising a film-forming thermoplastic organic polymer and electrically conductive metallic particles having a largest dimension in the range of about 0.02 to 50 microns, the solids portion of the coating comprising at least about 20 percent by volume of a film-forming polymer and at least about 25 percent by volume of metallic particles, the coating further having a microporous structure to a depth of at least about 1 micron from the exposed surface thereof, and this microporous structure having about 40 to 90 percent open space, with the major portion of the open space being provided by pores with a largest dimension between about 0.1 to 15 microns, and with the metallic particles exposed in this microporous structure.

3,775,177

PROCESS FOR MAKING A SEMICONDUCTOR ELEMENT

Shigeru Hayama, 1-1, 2-chome, Rinsengi, Yonezawa-shi, and Shogo Niino, 7-1, 2-chome, Higashi, Yonezawa-shi, both of Japan

Filed July 26, 1971, Ser. No. 166,318

Claims priority, application Japan, Feb. 26, 1971, 46/9730

Int. Cl. B44d 1/34, 1/42

U.S. Cl. 117—230 1 Claim

Semiconductor elements are made of organic polymer by first forming an aqueous solution of a tetrazocompound made by tetrazotization of a benzidine compound or a diaminostilbene compound, adding to the solution a transition metal or a salt thereof to precipitate an addition compound and heating said addition compound to polymerize it into a polymer having a molecule weight of about 1,000 to 50,000 that is soluble in organic solvents and comprises a multiplicity of phenylene groups. The polymerization of the addition compound may be performed in the presence of vinyl monomers to produce copolymers.

3,775,178

DUAL-LAYER QUADRUPLEX VIDEO RECORDING TAPE

Kenneth J. Perrington, New Brighton; Peter J. Vogelgesang, Roseville, and James K. Knudsen, St. Paul, all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Aug. 26, 1971, Ser. No. 175,106

Int. Cl. H01f 10/02

U.S. Cl. 117—239 3 Claims

Quadruplex video recording tape having a dual-layer magnetizable coating to provide improved RF output and video signal-to-noise ratio and also greater audio output and sensitivity. The magnetizable particles of the inner layer should be magnetically oriented longitudinally and provide a coercivity of 240–600 oersteds in the longitudinal direction. The magnetizable particles of the outer layer are magnetically oriented in the crosswise direction and provide a crosswise coercivity of 375–1,000 oersteds.

3,775,179

MAGNETIC RECORDING MEDIA

Hugh Clow, Reading, England, assignor to EMI Limited, Hayes, Middlesex, England

Filed Feb. 24, 1970, Ser. No. 13,463

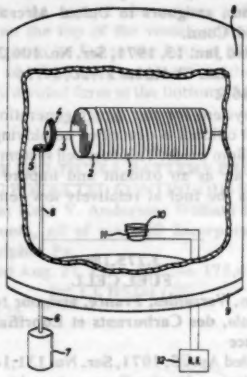
Claims priority, application Great Britain, Feb. 22, 1969, 9,647/69

Int. Cl. H01f 10/02

U.S. Cl. 117—240 6 Claims

A magnetic recording medium comprises a base material provided with a layer of magnetic metal, wherein the magnetic metal is a mixture of cobalt and chromium containing chromi-

um in the range from 1 to 20%. Preferably chromium constitutes 3 to 10% of the mixture, the layer is in the thickness



range from 0.1 to 1μ and the base material is provided with the layer by evaporation of cobalt and chromium thereon.

3,775,180

METHOD FOR DESCALING STEEL

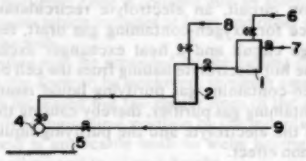
Masaru Hirata, 1500-55, Fukuoka cho, Iruma gun, Saitama ken; Kazuo Kunioka; Teruo Shimotsuma, both of c/o Gijutsu Kenkyusho, Nippon Kokan Kabushiki Kaisha, and Shigenari Shimizu, c/o Keihin Seitetsusho, Nippon Kokan Kabushiki Kaisha, Kawasaki, all of Japan

Continuation-in-part of Ser. No. 95,855, Dec. 7, 1970, abandoned. This application Aug. 22, 1972, Ser. No. 282,831

Claims priority, application Japan, Dec. 8, 1969, 44/98175

Int. Cl. B21b *45/00*; B24c *1/00*

U.S. Cl. 134—7 **3 Claims**



Steel is descaled by spraying a mixture of a solid such as aluminum oxide and silicon carbide, water and a gas such as air under specified conditions onto the steel.

3,775,181

LITHIUM STORAGE CELLS WITH A FUSED ELECTROLYTE

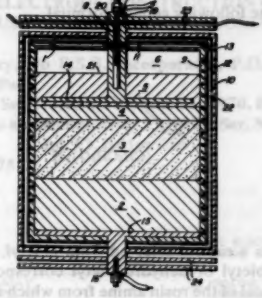
Joseph L. Ryerson, Holland Patent, N.Y., assignor to Broomfield Ryerson Research Corporation, Holland Patent, N.Y.

Filed Aug. 12, 1971, Ser. No. 171,242

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 LF **9 Claims**

Sealed, lightweight, reversible E.M.F. cells utilizing a bottom layer of molten bismuth catholyte, a topmost layer of molten lithium anolyte and a two layer interfacing fused salt electrolytic system located between the catholyte and the anolyte layers, the said electrolytic system comprising a mixture of fused potassium chloride and bismuth chloride in juxtaposition to the molten bismuth catholyte and a lithium halide eutectic comprising preferably approximately 80% KCL plus 20% LiCl in juxtaposition to the molten anolyte material. The components are contained in a hermetically sealed impervious container and the anolyte and catholyte are respectively provided with anode and cathode terminals immersedtherein.



The said components are arranged in layers, with those having a lower specific gravity floating upon those having a higher specific gravity.

3,775,182

TUBULAR ELECTROCHEMICAL CELL WITH COILED ELECTRODES AND COMPRESSED CENTRAL SPINDLE

Jimmie Donald Patton, and Klaus Guenther Wuttke, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1972, Ser. No. 229,277

Int. Cl. H01m *35/16*

U.S. Cl. 136—13 **1 Claim**

Disclosed herein is a tubular electrochemical cell having electrolyte therein and having anode(s), cathode(s) with separator(s) therebetween all coiled around a central spindle, the cell having a cap which is compressively affixed thereto so that one terminal of the cell is in compressive contact with the electrically conductive area of the tubular casing and the other is in compressive contact with the electrically conductive area of the cap.

3,775,183

AQUEOUS ELECTROLYTE SOLUTION CONTAINING AN ETHOXYLATED ROSIN AMINE FOR USE IN A RECHARGEABLE ELECTRIC BATTERY

John W. Paulson, Madison, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

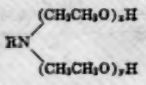
Filed June 15, 1972, Ser. No. 263,315

Int. Cl. H01m *43/06*

U.S. Cl. 136—30 **5 Claims**

An electric battery having an azodicarbonamide compound as the depolarizer in which the electrolyte consists essentially of an aqueous solution of zinc chloride, ammonium chloride and an ethoxylated rosin amine. It is preferred that the aque-

ous electrolyte solution have a pH ranging from about 2.5 to about 5. The aqueous electrolyte solution may contain from about 5 to about 50% by weight of zinc chloride, up to about 25% by weight of ammonium chloride and from about 0.1 to about 5% by weight of an ethoxylated rosin amine with the balance of the solution being water. The ethoxylated rosin amine has the following general formual



wherein R is a radical selected from abietyl, dihydroabietyl, tetrahydroabietyl or dehydroabietyl corresponding with the organic radical of the rosin amine from which it was produced. X and y may range from 0 to 20 with the sum of x and y being at least 1 but not exceeding about 20. The improved electrolyte of this invention reduces the gassing rate of the zinc anode in said electrolyte, it improves the redeposition of the zinc active material during the recharging of the battery, and it provides a battery having a substantially improved cycle life.

3,775,184

COMPONENT FOR A FUEL ELEMENT AND A BATTERY PRODUCED WITH THESE COMPONENTS

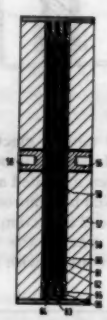
Dieter Kuhl, Bubenreuth, and Hubert Poppa, Baiersdorf, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed July 24, 1970, Ser. No. 58,033

Claims priority, application Germany, July 26, 1969, P 19 38 044.0

Int. Cl. H01m *27/04, 13/00*

U.S. Cl. 136—86 R **3 Claims**



A component for a fuel cell element which operates on gaseous reactants or with a fuel dissolved in electrolyte. The component comprises an electricity conducting sheet. On at least one side of said sheet is at least one metallic spacer net, an electrode and a diaphragm, whose edge is tightly connected with said separating sheet and is cast into a synthetic frame, which projects unilaterally beyond the area of said separating sheet and contains channels closed with synthetic foils for inlet and outlet of the electrolyte. The separating sheet, spacer net and diaphragm are provided with diametrically opposed lugs.

3,775,185

FUEL CELL UTILIZING FUSED THALLIUM OXIDE ELECTROLYTE

Harold Russell Kunz, and Myles Alexander Walsh, both of Vernon, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 13, 1971, Ser. No. 106,206

Int. Cl. H01m *27/20, 27/16*

U.S. Cl. 136—86 R **8 Claims**

A fuel cell system for the direct generation of electricity from a fuel and oxidant is described employing an electrolyte containing thallium oxide. This fuel cell system will operate efficiently using air as an oxidant and impure hydrogen or a hydrocarbon as the fuel at relatively low temperatures, i.e., 250°–300°C.

3,775,186

FUEL CELL

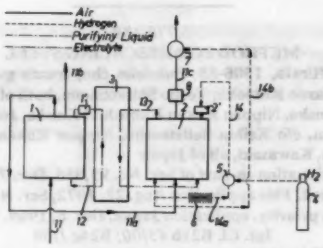
Jacques Cheron, Versailles, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, Ruell-Malmaison, France

Filed Apr. 5, 1971, Ser. No. 131,147

Claims priority, application France, Apr. 16, 1970, 7013729

Int. Cl. H01m *27/12*

U.S. Cl. 136—86 R **11 Claims**



A fuel cell apparatus comprising a cell block and a oxygen-containing gas purifier placed by the side of cell block, a fuel recirculation circuit, an electrolyte recirculation circuit, a static device for oxygen-containing gas draft, fed through a fuel leakage circuit and a heat exchanger exchanging heat between the hot electrolyte issuing from the cell block and the cold oxygen-containing gas purifying liquid issuing from the oxygen-containing gas purifier, thereby causing the respective motions of the electrolyte and the purifying liquid by double thermosiphon effect.

3,775,187

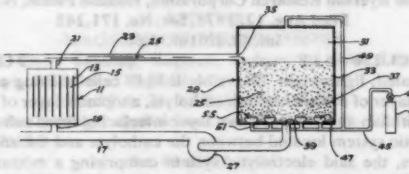
PRODUCTION OF AQUEOUS ZINC CHLORIDE ELECTROLYTE SATURATED WITH CHLORINE

Harry K. Bjorkman, Birmingham, Mich., assignor to Occidental Energy Development Company, Madison Heights, Mich.

Filed Nov. 18, 1971, Ser. No. 200,067

Int. Cl. H01m *31/00, 29/02, 11/00*

U.S. Cl. 136—86 A **3 Claims**



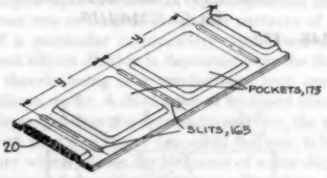
An aqueous solution of zinc chloride is saturated with chlorine gas by flowing a zinc chloride solution through a satu-

rator vessel in continuous flow from top to bottom thereof, passing chlorine gas in very finely divided form into the bottom of the vessel into contact with the moving zinc chloride solution so that chlorine not dissolving in the zinc chloride solution rises to the top of the vessel, and recirculating chlorine gas from the top of the vessel, mixing it with additional chlorine gas to be fed to the bottom of the vessel and passing recycle and feed chlorine gases into the zinc chloride solution in finely divided form at the bottom of the vessel.

3,775,188
METHOD OF MULTICELL BATTERY PRODUCTION USING POCKETED CONTINUOUS STRIP

John E. Oltman; Kent V. Anderson; William D. Geverdinck, and Max Tronik, all of c/o ESB Incorporated, P.O. Box 8109, Philadelphia, Pa.

Filed Aug. 27, 1971, Ser. No. 175,475
Int. Cl. H01m 1/02
U.S. Cl. 136—175 **8 Claims**



A method of constructing multicell batteries utilizes a continuous web comprising a plurality of structurally connected continuous Zones at least one of which comprises a continuous strip of metal. Deposits of electrodes are placed along the Zones of the continuous web after which the web is cut to structurally disconnect the continuous Zones from each other. Pockets are then indented in a Zone comprising a continuous strip of metal, the indenting being done in a manner which results in the pocketed Zone having the same relative longitudinal length after the indenting as it had before the indenting. Finally, the pocketed Zone is collated into an assembly of battery components which includes at least one other continuous Zone from the web.

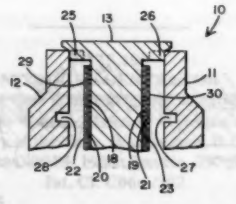
The indenting may be preceded by the cutting of a slit partially across the Zone to be pocketed, in which case the width of the slits is increased but the center lines of the slits remain in fixed relative longitudinal position by the indenting action.

The method is applicable both to webs having metal and plastic laminations and to all metal webs.

3,775,189
FORMING SEALED HOUSING FOR ELECTROCHEMICAL CELLS

Arthur M. Jaggard, Apple Valley, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Filed Feb. 25, 1972, Ser. No. 229,416
Int. Cl. H01m 1/02
U.S. Cl. 136—175 **5 Claims**

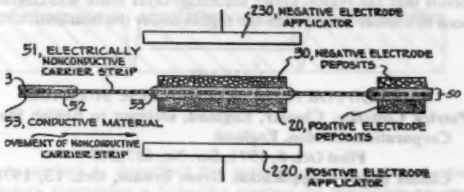


A process for forming an electrochemical cell housing by ultrasonically welding a first housing member to a second housing member to simultaneously form a leakproof support around the edges of the cathode of the cell and a leakproof joint between the battery housing members.

3,775,190
DUPLEX ELECTRODE CONSTRUCTION USING CONTINUOUS ELECTRICALLY NONCONDUCTIVE CARRIER STRIP

Daniel C. Oakley, c/o E.S.B. Incorporated, P.O. Box 8109, Philadelphia, Pa.

Division of Ser. No. 100,269, Dec. 21, 1970, Pat. No. 3,723,181. This application Mar. 27, 1972, Ser. No. 238,694
Int. Cl. H01m 1/00
U.S. Cl. 136—175 **7 Claims**



Duplex electrodes are constructed by placing intermittent deposits of positive and negative electrodes on opposite sides of a continuous, electrically nonconductive carrier strip. Electrically conductive material on both sides of and extending through holes in the nonconductive strip is used to conduct current between the positive and negative electrodes. The duplex electrodes are assembled into multicell batteries, preferably while the duplex electrodes are structurally connected by the continuous carrier strip; the carrier strip is then subsequently cut between duplex electrodes to obtain structurally unconnected batteries. Alternatively, the carrier strip may be cut between duplex electrodes before those electrodes are assembled into multicell batteries.

3,775,191
MODIFICATION OF CHANNEL REGIONS IN INSULATED GATE FIELD EFFECT TRANSISTORS

Kenneth George McQuhae, Ottawa, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed June 28, 1971, Ser. No. 157,116
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 **10 Claims**

Method of producing channel regions in IGFET's by implanting ions in the gate region through the gate, the gate of polycrystalline silicon material. The method both produces conducting channel regions and removes conducting channel regions. Enhancement mode and depletion mode transistors can be made. Other devices, such as resistors, can be formed simultaneously or sequentially by the implantation step.

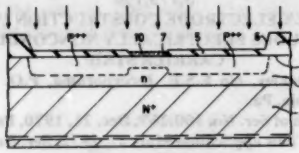
3,775,192
METHOD OF MANUFACTURING SEMI-CONDUCTOR DEVICES

Julian Robert Anthony Beale, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,541
Claims priority, application Great Britain, Dec. 9, 1970, 58,476/70
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 **13 Claims**

A method is described for making a semiconductor device in which in a hole in an insulating layer on the surface of a

semi-conductor is provided a metal layer in a self-registered manner so as to fill the hole and overlap at least on the edge of the insulating layer. Ions are implanted into the semiconductor through the insulator, the metal layer having a much greater masking effect than the insulator on the ions, with the result that the region under the metal layer mask will contain ions to a lesser extent than the region under the insulator.



3,775,193

METHOD FOR PASSIVATING A ZINC SURFACE

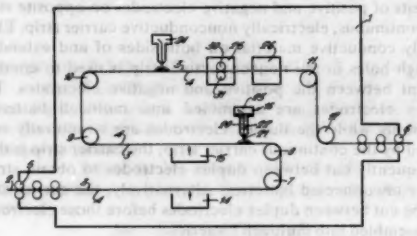
Patrick Costelloe, Chester, England, assignor to British Steel Corporation, London, England

Filed Oct. 8, 1971, Ser. No. 187,649

Claims priority, application Great Britain, Oct. 13, 1970, 48,583/70

Int. Cl. C23f 9/02; B05b 5/02

U.S. Cl. 148—6.2 **13 Claims**



A method of passivating a metallic surface to improve the subsequent adhesion of paint thereto comprising directing a passivating liquid through an electrostatic field and onto the metallic surface, the electrostatic field atomising the passivating liquid.

3,775,194

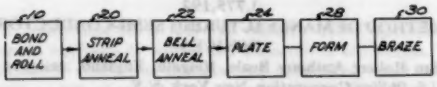
COMPOSITE MATERIAL, TUBING MADE FROM THE MATERIAL, AND METHODS FOR MAKING THE MATERIAL AND TUBING

John A. Dromsky, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 100,007, Dec. 21, 1970, Pat. No. 3,696,499. This application Mar. 16, 1972, Ser. No. 235,297

Int. Cl. C21d 1/78, 9/08

U.S. Cl. 148—12 **1 Claim**



A strip of composite metal laminate material embodying a thin inner layer of stainless steel sandwiched between and metallurgically bonded to two relatively thicker outer layers of low carbon steel is subjected to a brief, high temperature heat treatment followed by a relatively much longer heat treatment at much lower temperature for substantially eliminating the yield point in the laminate and for maximizing formability of the laminate while permitting some reduction in the corrosion resistance properties of the stainless steel layer of the laminate. The composite strip material is then readily formed into two, concentrically disposed convolutions of the strip material while the laminate material is in this highly formable condition. The convolutions of the strip material are then brazed together to provide a double-walled tubing, the brazing procedure being regulated to effect selected heat treatment of the formed composite material for substantially restoring the corrosion resistance properties of the stainless steel layer of the laminate within the finished tubing.

3,775,195

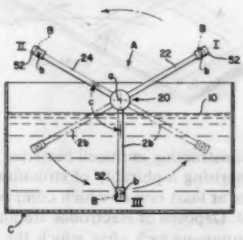
METHOD FOR QUENCH HARDENING ELONGATED WORKPIECES

Richard S. Sheetz, Shaker Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Division of Ser. No. 77,278, Oct. 1, 1970. This application Sept. 8, 1972, Ser. No. 287,543

Int. Cl. C21d 1/18

U.S. Cl. 148—153 **1 Claim**



A method and apparatus for quench hardening a plurality of successive elongated workpieces supported on a carrier and movable in a generally circular path from a loading station, to a heating station, and then through a quench hardening station wherein the members supporting the workpieces on the carrier are independently movable with respect to the other members of the carrier, at least in the vicinity of the quenching station.

3,775,196

METHOD OF SELECTIVELY DIFFUSING CARRIER KILLERS INTO INTEGRATED CIRCUITS UTILIZING POLYCRYSTALLINE REGIONS

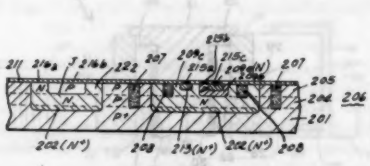
Kinji Wakamiya, Tokyo, and Isamu Kobayshi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 852,819, Aug. 20, 1969, Pat. No. 3,694,276. This application Mar. 10, 1972, Ser. No. 233,673

Claims priority, application Japan, Aug. 24, 1968, 43/60714; Aug. 24, 1968, 43/60713

Int. Cl. H01l 7/36, 11/00; C23c 13/00

U.S. Cl. 148—175 **1 Claim**



An integrated circuit and method of making same comprising substrate with one or more epitaxial layers containing ac-

tive circuit elements, circuit element isolation being obtained by polycrystalline regions with a carrier killer diffused therein. One particular feature of the disclosure is a method of making integrated circuits including the step of diffusing gold selectively into a semiconductor substrate through a polycrystalline region of high diffusion velocity which surrounds at least one active circuit element in the substrate.

3,775,197

METHOD TO PRODUCE HIGH CONCENTRATIONS OF DOPANT IN SILICON

Armen N. Sahagun, 16757 Bolero Ln., Huntington Beach, Calif.

Filed Jan. 5, 1972, Ser. No. 215,631
Int. Cl. H01l 7/36
U.S. Cl. 148—188 **3 Claims**

A novel method for producing very high concentrations of semiconductor dopants in silicon by a diffusion process. The concentration of dopant achievable by the present invention approaches the solid solubility limit of the dopant material. First an undoped layer of material, typically silicon dioxide, is deposited over one or both of the planar surfaces of a silicon substrate of a particular conductivity type. Next a second layer of doped silicon dioxide is deposited over the first layer, the dopant therein being of a conductivity type opposite of that of the silicon wafer. A third layer of undoped silicon dioxide is then deposited over the second layer. Next, the substrate of silicon, with the three layers deposited thereon, is heated to a temperature which causes the diffusion of some dopant into the upper region of the silicon substrate. The three layers of silicon dioxide are then stripped off, and three fresh layers are deposited. The heating step is repeated, "pumping," by diffusion, more dopant into the silicon substrate from the fresh source. The process can be repeated, thereby enabling the concentration of dopant in the silicon substrate to approach the solid solubility limit. This invention also contemplates growing the layers of silicon dioxide by controlled oxidation of the substrate, instead of by depositing them.

3,775,198

CHEMICAL COMPOSITION FOR COMBUSTIBLE TIP USED FOR FRICTION MATCHES AND METHOD FOR MANUFACTURING SAME

Hiroshi Hijikata, Shizuoka, Japan, assignor to Shizuoka Match Co., Ltd., Shizuoka-ken, Japan

Filed Aug. 14, 1972, Ser. No. 280,594
Int. Cl. C06f 3/00
U.S. Cl. 149—18 **19 Claims**

Chemical composition for combustible tip including such inflammable components as vinyl acetate, cellulosic substance and shellac instead of sulfur used in the conventional chemical composition of sulphurated tip so as to effectively obviate production of disgustful fume and poisonous effect on the human body at the time of ignition and inflammation. Also disclosed is a method for manufacturing such chemical composition for combustible tip through development and uniform dispersion of very fine air voids in the composition by active stirring.

3,775,199

NITROGEN GENERATOR

Carl Boyars, and Carl T. Zovko, both of Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 13, 1972, Ser. No. 297,513
Int. Cl. C06c 1/02
U.S. Cl. 149—35 **14 Claims**

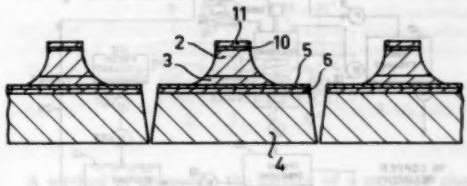
A material for generating hot nitrogen gas comprising sodium azide and sulfur in the presence of a conventional solid propellant ignitor.

3,775,200

SCHOTTKY CONTACT DEVICES AND METHOD OF MANUFACTURE

Dirk de Nobel, and Hendrikus Gerardus Kock, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,886
Claims priority, application Netherlands, Aug. 29, 1970, 7012831
Int. Cl. H01l 7/50
U.S. Cl. 156—17 **6 Claims**



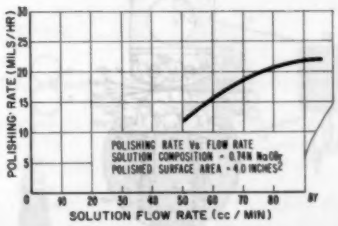
A method is described for making plural semiconductor devices containing a Schottky contact by providing on one side of a semiconductor wafer a metal layer to form the Schottky contact, and then subjecting the opposite side of the wafer to an etching treatment which attacks the semiconductor but not the Schottky metal until semiconductor portions are etched away leaving spaced semiconductor islands whose contact surface with the Schottky method is surrounded by free surface portions of the metal. Then the metal layer is severed along lines spaced from the islands to leave in the final device, an exposed metal surround to increase the breakdown voltage.

3,775,201

METHOD FOR POLISHING SEMICONDUCTOR GALLIUM PHOSPHIDE PLANAR SURFACES

Jagtar Singh Basi, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,546
Int. Cl. H01l 7/50
U.S. Cl. 156—17 **8 Claims**

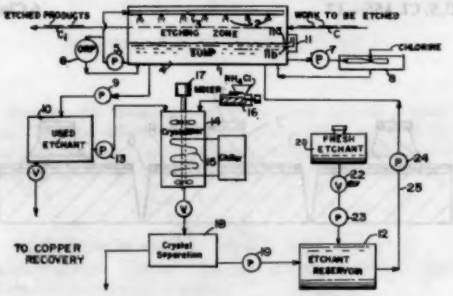


An improved method for polishing gallium phosphide planar surfaces is disclosed comprising positioning gallium phosphide wafers or slices in close adjacency to a polishing medium providing a relative motion between said wafer and polishing medium while providing a controlled predetermined flow of OBr ions to said wafers and polishing medium and continuing the relative motion until the wafer surface is polished to a smooth and featureless condition whereupon the wafers are washed and removed from the polishing mechanism.

3,775,202
ETCHING CONTROL SYSTEM

James L. Meek, Phoenix, and Enrico L. Vieane, Mesa, both of Ariz., assignors to DEA Products, Inc., Tempe, Ariz.

Filed Mar. 13, 1972, Ser. No. 233,947
Int. Cl. C23b 3/00; C23f 1/02
U.S. Cl. 156—19 10 Claims

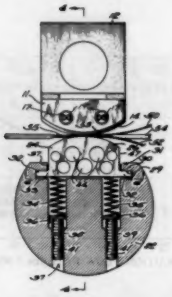


In an etching system utilizing ferric chloride solution or equivalent spray directed onto copper work pieces to be etched, the etchant in the etcher sump is circulated through a chlorinator under control of an etching control monitor. This introduces gaseous chlorine and effectively maintains the etching potential of the ferric (Fe^{+3}) ions present in the solution. As copper accumulates in the etchant, a part is removed, ammonium chloride is added, and this mixture is then cooled. A crystallized double salt containing copper is separated, and the solution, thus reduced in copper content, is stored for subsequent reintroduction to the etching system.

3,775,203
SEALING ROLLS WITH YIELDABLE SHOES

Harvey C. Johnson, Sheboygan, Wis., assignor to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Nov. 4, 1971, Ser. No. 195,704
Int. Cl. B32b 31/00; B21b 27/02
U.S. Cl. 156—582 11 Claims

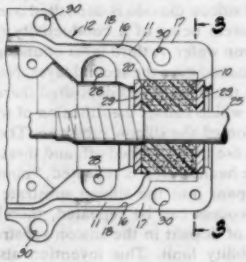


Apparatus for sealing the ends of covering sheets for absorbent pads or fillers includes a bed roller with spaced lands and an anvil roller with a plurality of individual anvil shoes or segments which coact with the lands on the roller to emboss links between pads. The anvil shoes are individually adjustably and yieldably mounted in a slot in the anvil roller to compensate for the varying thickness of intervening material and for misalignment or thermal distortion of the heated lands on the bed roller which can cause imperfect heat sealed seams. Biasing springs and adjustment screws for each anvil shoe enable minute independent adjustments of each of the anvil shoes and permit the shoes to yield during use, thus to provide uniform, neat heat sealed bands or embossed strips which secure the fillers within the covering sheets.

3,775,204
METHOD OF GASKETING THE MATING SURFACE OF HOUSING PARTS AND ENTRYWAYS FOR ELECTRICAL CONDUCTORS

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.

Filed July 6, 1971, Ser. No. 159,798
Int. Cl. H01b 13/08; B65h 81/06
U.S. Cl. 156—53 5 Claims



A method of gasketing the mating surfaces of housing parts and entryways of electrical conductors with reusable gasketing material. Strips of spongy, closed-cell, elastomeric material are coated with permanently non-setting, gel-like potting compound and then placed between the mating surfaces of the housing parts or wrapped in one or more superimposed convolutions about the conductors so as to replace appropriate compression as the parts are secured in assembled relation.

3,775,205
TEXTILE ADHESIVE

David Trimble Hermann, Belle Mead, and Kenneth Herald Remley, Warner, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 785,779, Dec. 20, 1968, Pat. No. 3,640,924. This application Sept. 28, 1971, Ser. No. 184,609
Int. Cl. B32b 5/08, 27/40
U.S. Cl. 156—72 5 Claims

Aqueous adhesive compositions containing a dispersed polyurethane polymer, the method of using the adhesive composition in textile applications, and the textile materials thus obtained. The adhesive composition is an aqueous dispersion of a particular class of self-dispersion or emulsifiable polyurethane polymers. The aqueous dispersions are obtained by adding a particular class of isocyanate-terminated polyurethane prepolymers having pendant carboxyl groups to water containing a tertiary aliphatic amine and allowing chain extension with water to proceed until all of the isocyanate groups have been reacted. The resulting polyurethane latex is thickened to the desirable viscosity with suitable thickening agents.

3,775,206

PROCESS OF MANUFACTURING FOAMED BODIES OF PLASTICS MATERIAL

Gustav Konig, Raiffeisenstrasse, Bonlanden/Stuttgart, Germany

Filed Jan. 22, 1971, Ser. No. 108,782
Claims priority, application Germany, Jan. 23, 1970, P 20 02 974.7
Int. Cl. B32b 5/18
U.S. Cl. 156—78 19 Claims

Foamable plastics material is introduced into and foamed freely in a freely flowable, particulate lightweight solid receiving material to form foamed bodies.

ERRATUM

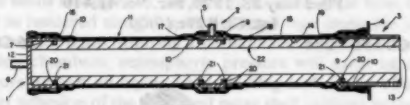
For Class 156—148 see:
Patent No. 3,774,662

3,775,207

PRODUCING A FILAMENT WOUND FUSEHOLDER

Emerson R. Harmon, Lisbon, Wis., assignor to Amalga Corporation, Monomonee Falls, Wis.

Division of Ser. No. 67,727, Aug. 28, 1970, Pat. No. 3,662,309. This application Oct. 28, 1971, Ser. No. 193,515
Int. Cl. B65h 81/06
U.S. Cl. 156—173 4 Claims



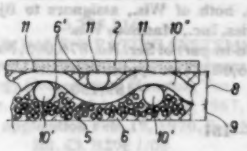
Method of making an electrical fuseholder so as to be leakproof and adaptable for submersion in a cooling fluid. At least one metal terminal is wound into and extends through a surrounding wall of resin impregnated filament wound fiberglass so that an electrical contact surface of the metal terminal appears at both the inner and outer sides of the fiberglass wall. An elastomeric sealing means placed between the metal terminal and the fiberglass wall provides a leakproof seal. Liquid resin from the winding operation can be kept off of the inner electrical terminal surface by placing sealing material between an annular terminal member and the winding mandrel prior to winding.

3,775,208

METHOD OF APPLYING PROTECTIVE FILMS TO PLASTIC SURFACES THROUGH AN INTERMEDIATE STRATUM

Harry Grigoleit, Unterehrendingen, and Max Kunzli, Wettingen, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Aug. 17, 1971, Ser. No. 172,521
Claims priority, application Switzerland, Sept. 1, 1970, 13032/70
Int. Cl. B32b 15/08; B05b 7/20; B29c 27/12
U.S. Cl. 156—178 7 Claims



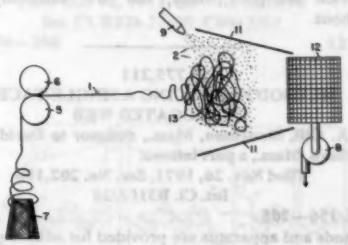
A method of protecting the surface of a moulded plastic part made from synthetic resin, fillers and/or fibers by application of a protective film of ceramic, metallic, or metallic-ceramic composition which is sprayed onto the surface of the parent material wherein the adhesion between the parent material and the sprayed-on protective film is improved by application of an intermediate stratum, in the form of a fabric or other mesh-like material made from an organic or inorganic substance, to the surface of the parent material prior to the spraying step. The mesh-like material is resistant to temperatures higher than the curing temperature of the synthetic resin and may be applied either simultaneously with production of the moulded plastic part and afterwards by means of adhesives.

3,775,209

NON-WOVEN ARTICLES MADE FROM CONTINUOUS FILAMENTS COATED WITH DISCRETE DROPLETS

Elmer Gordon Paquette, Madison, and Karl R. Guenther, Stoughton, both of Wis., assignors to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 876,005, Nov. 12, 1969, Pat. No. 3,616,002. This application Oct. 13, 1971, Ser. No. 188,750
Int. Cl. D04h 3/12
U.S. Cl. 156—181 5 Claims



Non-woven articles, including garments and porous sheet materials, are made from continuous filaments coated with discrete droplets of binder. In the past, non-woven products have suffered the handicap of a stiff and "boardy" feel. We eject continuous yarn or filaments in an air space and contact them with binder droplets while still suspended in air, so that the droplets dry sufficiently to become non-migrating before they are deposited on the screen or mold on which the fibers are brought into contact with each other and bonding takes place. This method is particularly suitable for making gar-

ments of elastomeric fibers, not easily handled in ordinary production machinery. Another generally applicable advantage is that the resultant products are exceptionally flexible and that the articles produced do not split into stratified binder-rich and-poor areas, but are uniformly bonded throughout.

3,775,210

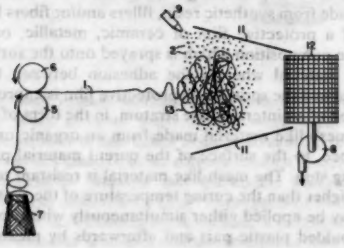
NON-WOVEN ARTICLES MADE FROM CONTINUOUS FILAMENTS COATED IN HIGH DENSITY FOG WITH HIGH TURBULENCE

Elmer Gordon Paquette, Madison, and Karl Russell Guenther, Stoughton, both of Wis., assignors to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 876,005, Nov. 12, 1969, Pat. No. 3,616,002. This application Oct. 14, 1971, Ser. No. 189,150

Int. Cl. D04h *3/12*

U.S. Cl. 156—181 **8 Claims**



Non-woven articles, including garments and porous sheet materials, are made from continuous filaments by ejecting continuous yarn or filaments into turbulent air and contacting them with binder in a high density fog while still suspended in air, so that the binder dries sufficiently to become non-migrating before the yarn is deposited on the screen or mold on which the fibers are brought into contact with each other and bonding takes place. This method is particularly suitable for making garments of elastomeric fibers, not easily handled in ordinary production machinery. Another generally applicable advantage is that the resultant products are exceptionally flexible and that the articles produced do not split into stratified binder-rich and-poor areas, but are uniformly bonded throughout.

3,775,211

METHOD FOR FACING A SINGLE-FACED CORRUGATED WEB

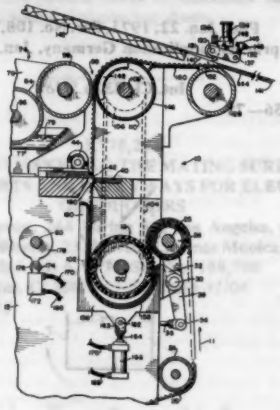
Frank A. Gill, Stoughton, Mass., assignor to David C. Dowd, Westboro, Mass., a part interest

Filed Nov. 26, 1971, Ser. No. 202,190

Int. Cl. B31f *1/28*

U.S. Cl. 156—205 **5 Claims**

Methods and apparatus are provided for adhering a plurality of discrete sheets sequentially to the open side of a single-faced corrugated web to produce a plurality of double-faced corrugated pieces of varying size, as desired, for the subsequent formation thereof into cartons or containers. Included herewith are means for separating the leading portion of the single-faced web after the initial adherence of the leading edge thereof with one of said discrete sheets for producing separate double-faced corrugated pieces with a single-faced overhang at each end thereof upon exit from the apparatus, and means causing the leading edge of the single-faced web to pick up and combine with the leading edge of one of said discrete sheets upon movement of the leading edge of said web through the nip of the combining rolls. Also included are means for momentary movement of a subsequently cut leading edge of the single-faced web away from the cutting station



at the moment of severance of the foremost separated portion of said moving single-faced web to prevent jamming of the cut leading edge against the knives at the cutting station.

3,775,212

PROCESS FOR PRODUCING ORNAMENTAL COATING MATERIAL HAVING CONCAVO-CONVEX PATTERNS

Hajime Iwasaki; Teiichi Shimizu, and Seiko Sakakura, all of Tokyo, Japan, assignors to Mitsuboshi Sangyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Filed Sept. 20, 1971, Ser. No. 182,269

Claims priority, application Japan, Sept. 26, 1970, 45/84410

Int. Cl. B32b *31/20, 3/00*

U.S. Cl. 156–220 **5 Claims**

The invention relates in a process for manufacturing an ornamental coating material having new concavo-convex patterns by means of the application of internal stress generated within the thermoplastic resin sheet by passing the sheet through between two rolls having different temperatures without using an expensive embossing roll.

3,775,213

PRODUCTION OF LIGHTWEIGHT POLYBENZIMIDAZOLE INSULATIVE MATERIAL

Michael Dunay, Fanway, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,410

Int. Cl. B29c *19/00*

U.S. Cl. 156—244 **16 Claims**

A process is provided for forming a lightweight polybenzimidazole product which is both high temperature re-

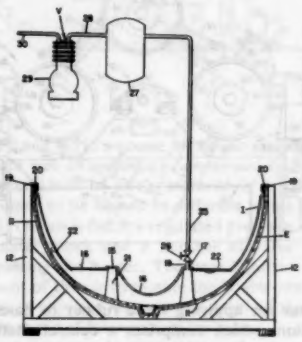
sistant and flameproof. A plurality of adjoining segments of hollow polybenzimidazole fiber are contacted with a solvent for the same, the solvent is evaporated thereby bonding the adjoining segments at locations where contact is made, and the resulting lightweight product is heated at an elevated temperature until volatile components present within the fibrous product are substantially removed. The resulting product is particularly useful as an insulative barrier in aerospace applications.

3,775,214

METHOD OF FABRICATING HOLLOW FRAME STRUCTURES FOR BOATS AND THE LIKE

Henry Winters, North Miami, Fla., assignor to Salvatore G. Militana, Miami Shores, Fla., a part interest

Filed July 19, 1971, Ser. No. 163,656
Int. Cl. B29c *5/00*; B29g *5/00*
U.S. Cl. 156—245 **4 Claims**



The method of fabricating hollow frame structures for boats and the like of fiberglass reinforced plastic consists of the steps of the simultaneous production of an inner and outer matching shells on a male and female mold respectively by the conventional laying up of glass fibers and resins. Upon partial curing of the outer and inner shells, an adhesive is applied to the exposed contacting surfaces. The inner shell is removed from the male mold and superimposed on the matching outer shell. The configuration of the inner shell provides a plurality of longitudinal and/or transverse stiffeners forming a plurality of communicating chambers between the two shells and an opening is then made in the inner shell for connecting a vacuum creating apparatus thereto. The edges of the superimposed shells having been trimmed prior to removal from their mold as rendered airtight upon placing a tape along the juncture thereof. Upon applying a partial vacuum to the communicating chambers, atmospheric pressure will exert an even pressure against all faying or contacting surfaces to effect a proper adhesion of the inner and outer shell sections to form a hollow frame structure of fiberglass reinforced plastic.

3,775,215

METHOD OF THIN COATING A MEMORY STACK

Herman J. Fasching, Minneapolis, and John A. Kasel, St. Paul, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,880
Int. Cl. G11c *11/02*
U.S. Cl. 156—278 **4 Claims**

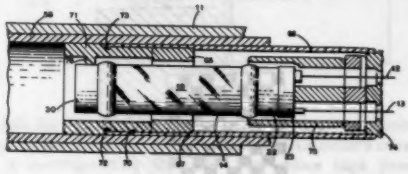
A method of thin coating a plurality of two-dimensional memory planes while assembled in a three-dimensional memory stack is disclosed. The memory stack is soaked in the coating liquid under vacuum and is then baked to set the coating liquid into a wax-like plastic solid conformal coating. This operation fixes the cores, wires, etc. in place and avoids magnetostrictive effects.

3,775,216

NEUTRON GENERATING SYSTEMS

Arthur H. Frentrop, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, Houston, Tex.

Division of Ser. No. 627,404, March 31, 1967, Pat. No. 3,508,058. This application Feb. 19, 1970, Ser. No. 14,872
Int. Cl. B29c *1/08*
U.S. Cl. 156—293 **5 Claims**



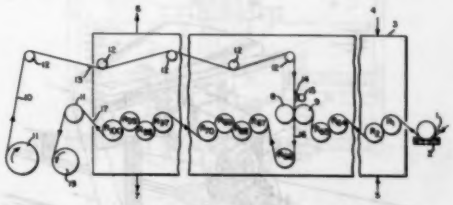
One embodiment of the invention describes a neutron generator tube in which the gas supply is thermally isolated from the ion source by reflective and conductive heat members. The conductive heat member is in thermal contact with the tube envelope to permit the envelope to dissipate waste heat from the ion source to an insulating gas (SF_6) in a well logging tool housing. The tool housing also is insulated from an ion source magnet to prevent arcing between the magnet and the tube envelope.

3,775,217

CONTINUOUS PROCESS AND APPARATUS FOR LAMINATING AN ORIENTED THERMOPLASTIC FILM TO WET CELLULOSE

Michael Orren Blake, and Paul Z. Larson, both of Clinton, Iowa, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 12, 1971, Ser. No. 188,210
Int. Cl. B32b *27/08*; C09j *5/02*
U.S. Cl. 156—308 **12 Claims**



A process and apparatus for laminating an oriented, surface-conditioned, thermoplastic film to a wet cellulose film by (a) heating and steam-sparging the thermoplastic film; (b) impregnating the wet cellulose film with an anchoring agent when the cellulose film contains about 180 to 350 % moisture; (c) drying the cellulose film to a moisture content of about 10 to 40 weight per cent; (d) laminating the surface-conditioned, steam-sparged side of the thermoplastic film to the im-

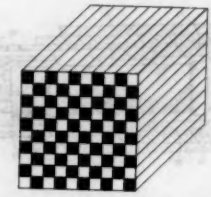
pregnated side of the cellulose film when the cellulose film has a moisture content of about 10 to 40 weight per cent conveniently carried out by simultaneously passing the two films through a set of heated nip rolls; then (e) drying the laminated film structure until the cellulose film contains about 3 to 8 weight per cent moisture where the weight per cent moisture is based on the weight of the moisture-free cellulose content thereof. This laminated film structure can be coated with a vinylidene chloride type coating making it particularly useful in packaging dry foodstuffs, such as cereals and snacks.

3,775,218

METHOD FOR THE PRODUCTION OF SEMICONDUCTOR THERMOELEMENTS

Gerald E. Hare; Norman W. Thompson, and Masahisa Tanaka, all of Ottawa, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Commercial Products, Ottawa, Ontario, Canada

Filed Mar. 4, 1971, Ser. No. 120,977
Int. Cl. C09j
U.S. Cl. 156—331 **2 Claims**



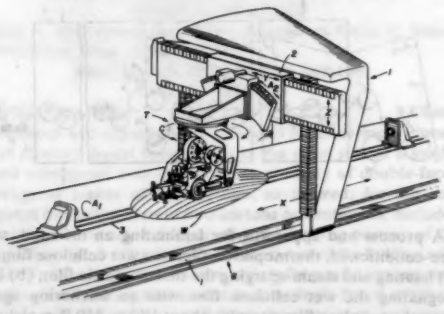
There is disclosed a method of preparing miniature semiconductor thermoelements suitable for use in power generators operable with low temperature heat such may be conveniently obtained from radioisotopes. The invention utilizes the compacting of piles of semiconductor thermoelements in a co-extensive arrangement wherein the respective polarities of the elements may be in series, parallel or series-parallel connection. The ends of the elements are connected by a matrix of electrically conductive regions formed on a high heat transferring electrically insulating material.

3,775,219

COMPOSITE-TAPE PLACEMENT HEAD

Harald E. Karlson, Santa Monica, and Ethridge E. Hardesty, Pine Valley, both of Calif., assignors to Goldsworthy Engineering Inc., Torrance, Calif.

Filed Apr. 5, 1971, Ser. No. 131,191
Int. Cl. B32b *31/00*
U.S. Cl. 156—363 **22 Claims**



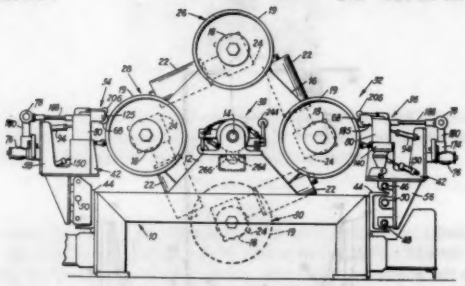
An integrally complete composite-tape placement head for direct attachment to a host gantry type of machine, which tape placement head is designed to precisely apply preimpregnated fiber reinforced tape to a work piece. The tape is initially supplied in the form of a roll with a suitable backing. The tape is automatically peeled from the backing by a separator mechanism and thereafter applied to the work piece. A powered cut-off device is actuated by a photoelectric mechanism to sever the tape at a proper location and at a preestablished angle. The determination of the pre-established angle is accomplished by a photoelectric edge sensing mechanism.

3,775,220

APPARATUS FOR BUILDING TIRES

William L. Rattray, Garden Grove, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Mar. 1, 1971, Ser. No. 119,583
Int. Cl. B29h *17/08, 17/10, 17/37*
U.S. Cl. 156—396 **3 Claims**



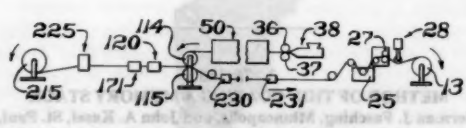
Apparatus for applying tread rubber to bases of circular cross section, which comprises a central shaft, means for mounting a plurality of bases on the central shaft, means for rotating said shaft to advance the bases through a succession of stations, means mounted adjacent one of said stations for applying rubber to a base advanced to said stations, means mounted adjacent another of said stations for applying rubber to the base having the rubber thereon applied thereto at said one of said stations, the rubber applied at the two stations taken together forming the tread and sidewall rubber portions of a tire, and means mounted on said central shaft for stitching the rubber applied to the base at said one of said stations firmly to the base.

3,775,221

BELT COVERING APPARATUS

Norman E. Reinhart, Cuyahoga Falls, and Claude Mullender, Barberton, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 204,931
Int. Cl. B29h *7/22*
U.S. Cl. 156—460 **9 Claims**



A belt covering apparatus that shuttles a carcass to be covered between a pair of storage reels, one of which is pivoted after the first pass to invert the carcass, with an extruder in line with the pass line of the carcass such that the continuous flow from the extruder may be applied directly

into the upper and lower surfaces of a belt carcass. Squeeze rolls, cutters and edge folding means cooperate with the extruder and conveying means of the carcass to laminate the covering to both sides of the carcass without interruptions.

3,775,222

HEAT SEALING APPARATUS

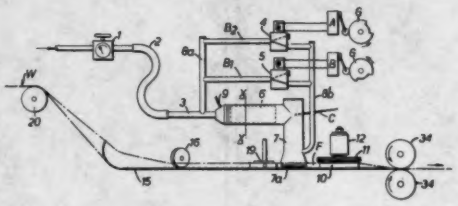
Peter Aspin, Chelmsford; Roy Garwood, Leigh-on-Sea, and Peter Wise, Basildon, all of England, assignors to Pembroke Carton and Printing Company Limited, Essex, England

Filed Apr. 12, 1971, Ser. No. 133,176

Claims priority, application Great Britain, Apr. 14, 1970, 17,655/70

Int. Cl. B29d *23/00*

U.S. Cl. 156—497 16 Claims



Air is heated and fed to a nozzle for hot air sealing a longitudinal seam in a web of material to continuously form a tube e.g. of different kinds of lining material in a carton lining machine required to be heated to different levels in order to form the seal. The air is fed at a regulated pressure, in parallel, through a heater block and a number of valve controlled passages bypassing the heater. The heat input to the heater and the amount of the air bypassing the heater are both controlled to give a required temperature level of the seam, regardless of the speed of formation of the tube.

3,775,223

WEB JOINING DEVICES

Anthony John Moseley, West Bromwich, and Michael Herbert James Morrall, Dudley, both of England, assignors to James Halley & Sons Limited, Stafford, England

Filed June 7, 1971, Ser. No. 150,625

Claims priority, application Great Britain, June 18, 1970, 29,526/70

Int. Cl. B65h *19/08, 19/18, 25/02, 69/02*

U.S. Cl. 156—502 4 Claims

Device for splicing one reeled length of web material onto another reeled length during operation of apparatus such as a rotogravure press which continuously consumes the web includes a magnetised element mounted for movement, typically rotation, with said one reel as the latter is run up to a peripheral speed corresponding to the speed of a flight of web from the other reel, and two proximity switches actuated by said element in timed sequence to cause a pasting roller or other element to urge said flight against a predetermined zone of the one reel for adhesion thereto, and a severing knife to cut trailing part of said flight thereafter so that web is then drawn from said one reel without interruption. The reels are conveniently carried in a rotatable cradle enabling their position to be interchanged.

3,775,224

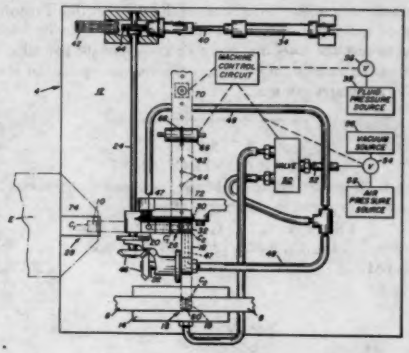
SPLICE TAPE HANDLING MECHANISM

Ralph Gentile, Rochester, and Willis G. Calberg, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,502

Int. Cl. B31f *5/00*

U.S. Cl. 156—506 8 Claims



A splicing tape handling mechanism for use in a processing system or the like to facilitate matching a customer's envelope with a corresponding filmstrip. The splice tape handling mechanism applies splice tape chips containing corresponding identification indicia, such as numbers, to the customer's envelope and to the film end portions of a pair of filmstrips for joining the two, one of which matches the customer's envelope. After the filmstrips have been processed, they are fed through subsequent operations such as printing and slitting to form film transparencies which are packaged in the envelopes containing corresponding identification indicia.

3,775,225

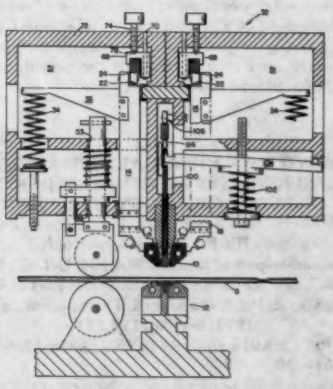
MACHINE FOR PERFORATING AND HEAT SEALING A WEB INCLUDING AN ELONGATED ELEMENT WITH A MULTIPLICITY OF DRIVERS

Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed July 6, 1971, Ser. No. 159,993

Int. Cl. B32b *31/00*; B26d *5/08*

U.S. Cl. 156—510 16 Claims



Machines with elongated elements operable on an advancing web; elements such as heat seal bar, perforator blade and

clamp for plastic film. Non-self supported elements are positioned and driven by drivers at middle and at ends, positioned by referencing stationary structure. Cam drivers, linear actuation, biased element positioning, angled push rod actuation and other features are shown. Slackness in web during heat sealing or supplemental indexing is produced by rotation of the normally stationary portion of a single direction clutch whose movable part is engaged with a shuttle belt. Compensation for slip and slackening also are achievable employing a differential drive between input and output nip roll pairs, with selected driving of the third shaft of the differential. Prolonged driving of the same differential can establish a desired speed ratio between the two nip pairs to compensate for slip, and change of the rotational input in response to a position sensor serves as a registry control.

3,775,226

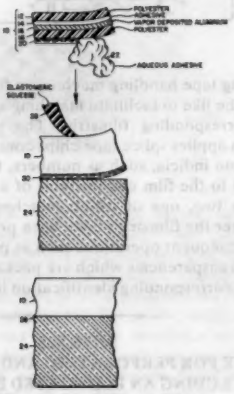
SOLAR CONTROL FILM

Michael E. Windorf, Malden, Mass., assignor to Material Distributors Corporation, Woburn, Mass.

Filed Feb. 8, 1971, Ser. No. 113,426

Int. Cl. B44f *1/100*; A61l *15/06*

U.S. Cl. 161—4 **2 Claims**



A solar control film for application to window glass comprises a vapor deposited aluminum coat, which partially transmits light, interposed between a pair of moisture permeable polymeric strata, each of which is self supporting. In one modification, an optional outer coat on one of the polymeric strata is composed of a pressure sensitive adhesive in association with a silicone release sheet. In another modification, an optional outer coat on the other of the polymeric strata is composed of a silicone release agent.

3,775,227

PIGMENTED POLYMERIC ARTIFICIAL FLORAL PRODUCT SUBSTRATES WITH IMPARTED FRAGRANCE ESSENTIAL OIL OF LONG DURATION

Godfrey Wilbert, 3767 South Park Ave., Carmel, and Thomas Brown, Seminary Hill Rd., Blasdell, both of N.Y.

Continuation-in-part of Ser. No. 864,184, Oct. 6, 1969, Pat. No. 3,567,119, which is a continuation-in-part of Ser. No. 832,538, May 2, 1969, abandoned. This application Feb. 20, 1971, Ser. No. 114,351

Int. Cl. A01n *3/00*; A41g *1/00*; A47g *33/04*

U.S. Cl. 161—30 **4 Claims**

Novel methods for imparting to polymeric products such as artificial flowers, fruits, vegetables, trees and shrubs, their characteristic fragrance or odor are described. Products that emit a natural-like and readily detectable pleasant fragrance, of long duration, are prepared by the application to the manufactured article of a polyolefin or copolymer emulsion containing a variety of essential components. The entire processing is accomplished at ambient or slightly elevated temperatures.

3,775,228

COMPOSITE LINEAR ELEMENTS

David E. Leary, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed June 8, 1971, Ser. No. 151,018

Int. Cl. B32b *5/12*; D02g *3/18*, *3/24*

U.S. Cl. 161—55 **11 Claims**

A composite linear element including an impregnated central body of closely grouped filaments and groups of coated dispersed surface filaments that extend laterally from the outer surface of the impregnated central body. The filaments may be glass. A fabric may be made using the composite linear element.

3,775,229

TREATING OF DISCRETE CONTAINERS

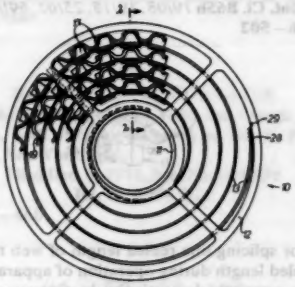
Hans Beckers, Bismarckstrasse 26, 406 Viersen, Germany

Filed Jan. 5, 1972, Ser. No. 215,553

Claims priority, application Germany, Jan. 11, 1971, P 21 01 021.9

Int. Cl. F24h *3/00*

U.S. Cl. 165—47 **11 Claims**



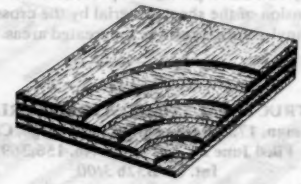
A method and an arrangement for treating of discrete containers are disclosed. A flexible band is provided with a plurality of recesses each of which is so dimensioned that it can receive one of the containers to be treated and retain it against movement. The band is then wound up together with the containers, to form a coil and in this condition subjected to the action of the treating medium whereupon the coil is unwound and the containers are removed from their respective recesses.

3,775,230

RIGID LAMINATE OF CREPED SECONDARY FIBER SHEETS

Robert D. Hilton, Madison, Wis.

Filed Nov. 1, 1971, Ser. No. 194,161
Int. Cl. B32b 5/12
U.S. Cl. 161—56 1 Claim



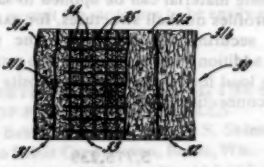
Sheets of primarily wood fiber laminated to form panels, boards and beams with mechanical and aesthetic properties similar to those of natural wood. The heavily ribbed sheets can be formed from pulp containing very low quality fibers, such as those recoverable from the paper and paperboard portions of municipal waste. A creping process imparts the ribbed structure to the lamina giving the material directional strength characteristics analogous to natural wood. Properties measured parallel to the ribs, like wood properties measured along the grain, are different than those measured in the opposite direction in the material.

3,775,231

MULTIPLE EMBOSSED FLEXIBLE WEB

Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 785,508, Dec. 20, 1968, Pat. No. 3,611,919. This application Oct. 8, 1971, Ser. No. 187,775
Int. Cl. B32b 5/12
U.S. Cl. 161—57 5 Claims



A flexible reinforced web of creped cellulosic tissue and a nonwoven reinforcing scrim having two or more embossments repeated continuously along the length of the web and superimposed on but out of register with each other. The embossments are formed by passing the web through two or more embossing stations on the surface of a single embossing roll, and drawing the web away from the surface of the embossing roll between successive embossing stations. The flexible web may be made of creped cellulosic tissue or other substantially non-resilient material, and reinforced with resilient threads or other elements extending continuously in the longitudinal direction of the web so as to maintain a constant web length between pairs of successive embossing stations.

3,775,232

SECURING AN EXTRUDATE INTO A BASE MATERIAL

Paul L. Gomory, Bethesda, Md., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 23, 1970, Ser. No. 31,245
Int. Cl. D03d 27/00
U.S. Cl. 161—62 6 Claims

An extrudate element is inserted into a base material so that a portion of the extrudate enters into or traverses the base material. The inserted extrudate element, the constituent of the base material, or both are composed of an expandable extrudate containing an expansion agent. The expansion agent is activated during or after insertion of the extrudate element to cause enlargement of the expandable extrudate and/or the substrate or base. This enlargement fixes the extrudate element into the base material by tightening the inserted element against the base material to wedge it in place, as by causing portions of the inserted element to enter interstices of the base

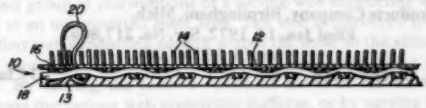
material, or by causing the inserted element to expand on both sides of the insertion opening to a diameter greater than that of the insertion opening. The insertion and subsequent fixing into a base material of a plurality of elements produces a pile surfaced article. In one embodiment a plurality of elements composed of a foamable material containing a suitable foaming agent is extruded directly through a base material and foamed, thereby locking the foamed elements into the backing to form a pile surface of foamed extrudate.

3,775,233

TUFTED PILE PRODUCT

William L. Maige, 21 Oak Ln., Moultrie, Ga.

Filed Apr. 11, 1972, Ser. No. 242,922
Int. Cl. D03d 27/00; D04h 11/00
U.S. Cl. 161—62 16 Claims



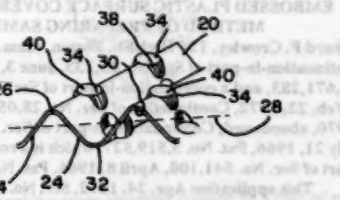
A tufted pile product having a woven polypropylene fabric with a flock adhered to one side thereof and pile extending through the fabric from the opposite side thereof to form a product wherein the flock and the pile cover one side of the polypropylene fabric to provide a pleasing visual effect.

3,775,234

GRID STRUCTURE WITH WAVED STRIPS HAVING APEXES WITH ENLARGED SECTIONS FORMED THEREIN

John P. Rich, Nashua, N.H., assignor to Improved Machinery, Inc., Nashua, N.H.

Filed Sept. 15, 1972, Ser. No. 289,333
Int. Cl. B32b 3/28; B01d 33/06; D21f 1/60
U.S. Cl. 161—68 20 Claims



A flat or annularly configured grid structure comprising non-planar or waved strips which are formed to include

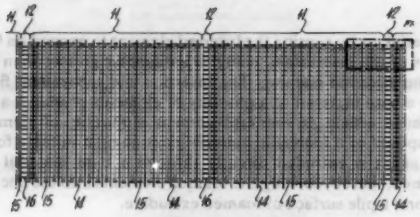
generally V-shaped portions. Adjacent ones of the generally V-shaped portions have their pointed apexes on opposite sides of the central plane of the strip, and the apexes have sections substantially enlarged longitudinally of the strip for increasing the strength of the strip and facilitating connection of the strip to laterally adjacent structure, such as by welding.

3,775,235

PLEATABLE FABRIC

Marie W. Howell, 298 Elizabeth St., New York, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,266
Int. Cl. A47h *37/00*
U.S. Cl. 161—70 **3 Claims**



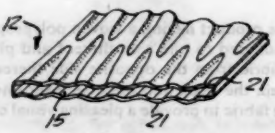
A fabric for curtains, draperies and the like which includes a plurality of narrow fabric panels of relatively stiff and wrinkle-free texture interstitched in parallel by flexible threads so that the strips will readily pleat along the lines of the flexible threads.

3,775,236

RESILIENT PADDING MATERIAL

Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.

Filed Jan. 14, 1972, Ser. No. 217,806
Int. Cl. B32b *3/28*
U.S. Cl. 161—116 **3 Claims**



A resilient padding material formed of a thick, resilient sheet of foam plastic having a thin backing sheet covering and adhesively laminated to one face thereof. The backing sheet is formed of a non-woven fabric made of randomly oriented, stretched fine polypropylene filaments, with the backing sheet being transversely creped by application of heat to the backing sheet prior to lamination.

3,775,237

EMBOSSED PLASTIC SURFACE COVERING AND METHOD OF PREPARING SAME

Richard P. Crowley, 125 High St., Boston, Mass.

Continuation-in-part of Ser. No. 43,233, June 3, 1970, Pat. No. 3,671,283, and a continuation-in-part of Ser. No. 228,396, Feb. 22, 1972, Continuation of Ser. No. 28,052, April 13, 1970, abandoned, Continuation-in-part of Ser. No. 566,810, July 21, 1966, Pat. No. 3,519,527, which is a continuation-in-part of Ser. No. 541,100, April 8, 1966, Pat. No. 3,453,171. This application Apr. 24, 1972, Ser. No. 246,722
Int. Cl. B32b *3/00, 3/30*
U.S. Cl. 161—116 **16 Claims**

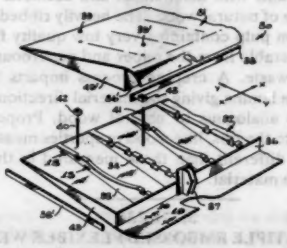
A chemically embossed vinyl-chloride resin sheet material is prepared by treating certain areas of the gelled surface of a vinyl-chloride plastisol containing a blowing agent with a liquid containing a carboxylated vinyl-chloride resin and a heat-reactive compound, such as an amide reactive with the carboxyl groups of the resin, and heating the treated gelled vinyl-chloride resin sheet material to a temperature sufficient to react the amide with the carboxylated vinyl-chloride resin to cross-link the resin, to decompose the blowing agent and to fuse the vinyl-chloride resin plastisol after expansion, whereby a chemically embossed product is produced due to inhibition of full expansion of the sheet material by the cross-linked carboxylated vinyl-chloride resin in the treated areas.

3,775,238

STRUCTURAL COMPOSITE MATERIAL

John W. Lyman, 1730 Kettner Blvd., San Diego, Calif.

Filed June 24, 1971, Ser. No. 156,369
Int. Cl. B32b *3/00*
U.S. Cl. 161—123 **7 Claims**



A reinforced composite structure consisting of a pair of matching halves is disclosed herein wherein each half includes reinforcing members arranged in a predetermined geometry, consistancy and quality forming a structural matrix. The composite material is designed to meet analytical requirements and to satisfy the loading conditions to which it is subjected. The composite material can be applied to sandwiched cores, structural profiles or shell structures, for example. Fastening and other securing devices secure the structure halves together in addition to adhesives and also provide a means for transferring load forces from the composite material to load absorption connecting structures.

3,775,239

PACKAGING MATERIAL, PACKAGES AND METHOD OF MAKING SAME

John E. Snow, Minneapolis, Minn., assignor to RAP Industries Inc., Minneapolis, Minn.

Continuation of Ser. No. 538,859, March 30, 1966, abandoned. This application May 24, 1971, Ser. No. 146,401
Int. Cl. B32b *27/10, 31/30;* B29c *24/00;* D21h *1/28;* B29f *3/00*
U.S. Cl. 161—250 **5 Claims**

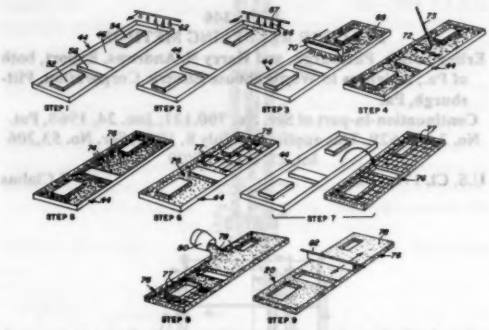
This invention relates to a novel heat sealable packaging sheet material which is resistant to the transmission of oils and greases and to the strong durable packages made from such material.

3,775,240

STRUCTURAL BUILDING MODULE

Richard Deane Harvey, Fort Lauderdale, Fla., assignor to Heckinger and Associates, Inc., Pompano Beach, Fla.

Filed Nov. 27, 1970, Ser. No. 92,994
Int. Cl. B32b 3/02
U.S. Cl. 161—149 6 Claims



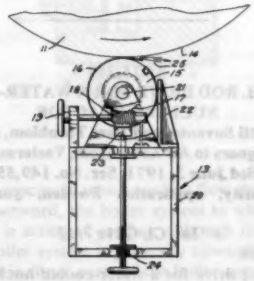
This disclosure relates to a building module and to a building system wherein the module is used in the construction of low cost housing units. The module includes a fiber reinforced plastic shell having a rectangular center portion with upturned edges forming a recess which receives a lightweight foam concrete filler material. The module has window and doorway openings therethrough, and suitable reinforcing members are embedded in the foam concrete material to provide the structural strength required to meet building code specifications and for handling purposes. Preformed building modules are used to construct the exterior walls of an enclosure in the building construction system, the modules being positioned so that the plastic shell faces outwardly, thus providing a weatherproof outside surface for the enclosure. The building system further includes a foundation upon which the modules rest and to which they are secured, prefabricated interior walls and a roof, which permit the structure to be easily assembled.

3,775,241

DEVICE AND METHOD FOR FINISHING THE CONTOUR OF PAPER MAKING ROLLS

Edgar J. Justus, Beloit, Wis., and Eugene S. Skinner, Roscoe, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed July 21, 1971, Ser. No. 164,663
Int. Cl. D21f 5/02
U.S. Cl. 162—199 10 Claims



A roll in a paper making machine carrying a web of paper over a portion of its circumference includes a grinding roll engaging the web carrying roll on a non-web carrying portion of its circumference for grinding the surface to a desired contour during actual operation of the roll and of the paper making machine. Means are provided for removing grinding residue from the non-web carrying circumferential surface of the rotating roll to prevent the grinding residue from being carried up beneath the web as it passes over the web-engaging circumference of the rotating roll.

3,775,242

SINGLE ENDLESS STRANDS AS SUPPORT SURFACES IN VARIOUS SECTIONS OF PAPERMAKING MACHINE HAVING INTEGRATED CONVOLUTIONS

Frank H. Orbison, and Howard M. Helland, both of Appleton, Wis., assignors to Appleton Mills, Appleton, Wis.

Filed Nov. 23, 1971, Ser. No. 201,323
Int. Cl. D21f 1/10, 1/26; B65g 15/12
U.S. Cl. 162—208 11 Claims

A porous supporting structure for a fluid-impregnated web or sheet which includes a series of supporting surfaces each of which is composed of a group of adjacent, parallel, machine direction convolutions of a single strand mounted to travel in a path over a roll assembly in a series of repeating convolutions. The supporting surfaces are integrated by intermingling a group of convolutions of one web supporting surface with a second group of convolutions of a second web supporting surface at an unsupported lease area. The web is conveyed from the first web supporting surface across the lease to the second web supporting surface to provide continuous support for the web. By varying the relative speed of travel of the strands forming the various web supporting surfaces, or by varying the angularity between the two integrated web supporting surfaces, the finish effects and degree of dewatering of the web can be varied.

3,775,243

WATER SAVEALL FOR GROOVED ROLL IN PAPER MACHINE PRESS NIP

Terence E. McCarrick, Watertown, N.Y., assignor to The Black Clawson Company, Hamilton, Ohio

Filed June 1, 1970, Ser. No. 42,062
Int. Cl. D21f 3/02; D21g 9/00
U.S. Cl. 162—272 6 Claims

In a paper machine press assembly formed by a pair of press rolls, one of which is circumferentially grooved and through which a press felt and a paper web pass, a saveall is mounted adjacent the ingoing side of the press nip between the press

felt and the grooved roll. The saveall is formed with a planar bottom wall which extends away from the press nip in closely spaced relationship to the inner surface of the felt, a semicylindrical top wall which curves away from the felt back toward the grooved roll and a series of internal baffles which extend from the bottom and top walls inwardly of the saveall to both stiffen the unit and form a series of upwardly opening troughs which collect liquid expressed from the grooved roll at the ingoing side of the press nip.

3,775,244

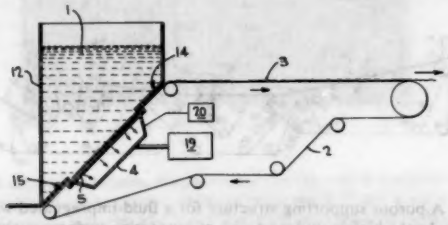
APPARATUS FOR MANUFACTURING NONWOVEN TEXTILES

Johann Hubschmann, Lyon Ler, France, assignor to Societe Rhodiaceta, Paris, France

Filed Oct. 14, 1971, Ser. No. 189,155

Int. Cl. D21f 1/52

U.S. Cl. 162—351 **7 Claims**



An apparatus for manufacturing nonwoven textile webs from an aqueous dispersion of fibers including an endless flexible porous belt, a headbox positioned to deliver the aqueous dispersion to the belt, and at least one suction device having a removable and perforated mask, the perforations of the mask being aligned and arranged parallel to the direction of travel of the porous belt. The suction device is located on the opposite side of the belt from the headbox and is conterminous with the headbox.

3,775,245

DEVICE FOR LOCATING A FUEL ASSEMBLY CAN FAILURE IN A NUCLEAR REACTOR

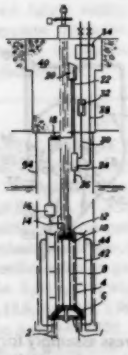
Jean-Paul Delisle, Manosque; Alain Rulleau, Pertuis, and Lucien Prouteau, Maurepas, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Sept. 21, 1971, Ser. No. 182,315

Claims priority, application France, Sept. 22, 1970, 7034315

Int. Cl. G21c 17/04

U.S. Cl. 176—19 LD **13 Claims**



The device comprises a plate for the distribution of tubes which serve to sample the coolant within all the fuel assemblies, a first selector which is mounted above the distribution plate and traversed by ducts for providing a communication between a number of sampling tubes and a second selector which is mounted above the first selector. The ducts are connected either individually or simultaneously to a measuring apparatus by means of the second selector. Both selectors are supported by a removable neutron shield plug.

3,775,246

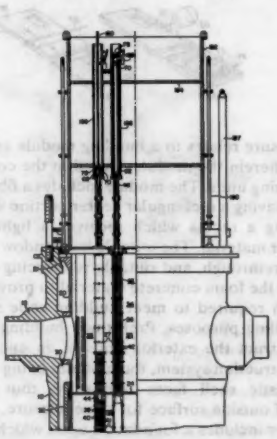
REACTOR REFUELING METHOD

Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 700,121, Jan. 24, 1968, Pat. No. 3,607,629. This application July 8, 1970, Ser. No. 53,206

Int. Cl. G21c 19/00

U.S. Cl. 176—30 **5 Claims**



A nuclear reactor is disclosed wherein hydraulic drive mechanisms are provided to vary the location of a plurality of neutron absorbing control elements associated with selected fuel assemblies. Each fuel assembly comprises a fixed array of commingled and spaced fuel pins and guide tubes. Each selected assembly has a plurality of individually movable two-position control elements which are coupled to drive mechanisms which operate to telescope the control elements within their associated guide tubes. The control elements are situated such that they can be withdrawn into and removed with the upper support structure for refueling.

3,775,247

CONTROL ROD DRIVE FOR A WATER-COOLED NUCLEAR REACTOR

Bengt Ode; Zntti Suvanto, and Lars Tornblom, all of Vasteras, Sweden, assignors to AB Asea-Atom, Vasteras, Sweden

Filed June 3, 1971, Ser. No. 149,558

Claims priority, application Sweden, June 18, 1970, 8474/70

Int. Cl. G21c 7/12

U.S. Cl. 176—36 **5 Claims**

A control rod drive for a water-cooled nuclear reactor includes a double-walled cylinder with an opening at the bottom from the space between the walls into the interior. A piston slidable in the interior is connected to the control rod. A motor driven spindle carries a nut which can be moved upwardly into engagement with the piston to raise the control

rod for normal control purposes. A source of gas under pressure is connected through a scram valve to the top of the space

between the walls, for pressing water into the cylinder to raise the piston and control rod quickly in an emergency.

3,775,248

NUCLEAR REACTOR BOILER SYSTEM

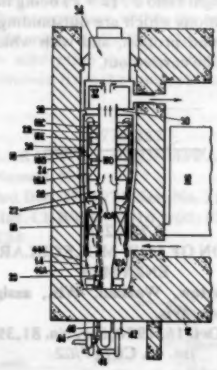
Anthreas Nicholas Charcharos, Lutterworth, England, assignor to British Nuclear Design & Construction Limited, Leicester, England

Filed Feb. 24, 1972, Ser. No. 228,804

Claims priority, application Great Britain, Feb. 25, 1971, 5,422/71

Int. Cl. G21c *15/00*; F22b *21/00*

U.S. Cl. 176—65 **4 Claims**



In a nuclear reactor in which coolant flow through the reactor core is downward, the boiler system to which the heated coolant is fed is arranged so that, although the coolant flow through the boiler system is generally upward, it is nevertheless downward in those parts of the boiler system which contain water in the liquid phase; and the flow of water through those parts is arranged to be upward, thereby alleviating the problems of instability and thermal shock which are associated with downward water flow particularly at low flow rates.

3,775,249

NUCLEAR REACTOR FUEL ELEMENTS

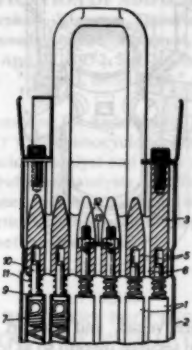
Leslie Clapham, Blackpool, England, assignor to United Kingdom Atomic Energy Authority, London, England

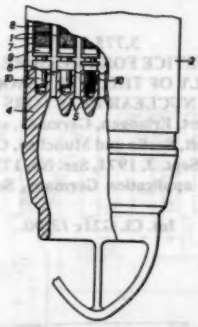
Filed Oct. 26, 1971, Ser. No. 192,215

Claims priority, application Great Britain, Oct. 29, 1970, 51,595/70

Int. Cl. G21c *3/32*

U.S. Cl. 176—78 **1 Claim**





The invention relates to a nuclear reactor fuel element assembly which is in the form of a bundle of parallel fuel pins extending between top and bottom end fittings in the assembly. The top and bottom end fittings are held together by a number of lifting pins which are screwed into the bottom end fitting and have spigots extending through the top end fitting and fitted with retaining nuts. A fuel pin locking member consists of a U-shaped split pin having its legs extending through transverse drillings in the retaining units and spigots of two adjacent pins. Thus the retaining nut of each pin is locked to the spigot and the locking member prevents relative rotation between the pins and hence prevents unscrewing of the pins from the bottom end fitting.

3,775,250

DEVICE FOR SUSPENDING AND SUPPORTING A REACTOR PRESSURE VESSEL IN A NUCLEAR POWER PLANT

Manfred Scholz, Erlangen, Germany, and Friedrich Wakonig, Graz, Austria, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

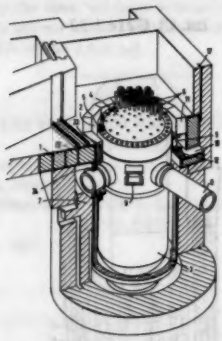
Filed Mar. 17, 1971, Ser. No. 125,132

Int. Cl. G21c *13/02*

U.S. Cl. 176—87 **5 Claims**

Device for suspending and supporting a reactor pressure vessel in a reactor chamber of a nuclear power plant includes

a cover for the reactor chamber formed with an opening through which the pressure vessel extends into the reactor chamber, the cover being of compartment-shaped steel construction, support paws extending from the outer surface of



the reactor pressure vessel, and support brackets located below the cover and secured thereto so as to form a structural entity therewith, the support paws being supported on the support brackets.

3,775,251

SAFETY DEVICE FOR PRESSURE VESSELS, PARTICULARLY OF THE TYPE ASSOCIATED WITH NUCLEAR REACTORS

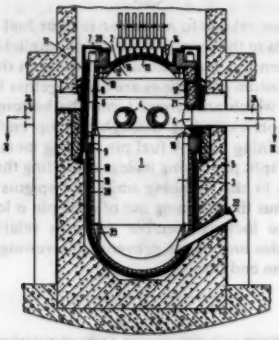
Hans-Peter Schabert, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munchen, Germany

Filed Sept. 3, 1971, Ser. No. 177,552

Claims priority, application Germany, Sept. 8, 1970, P 20 44 304.3

Int. Cl. G21c *13/00*

U.S. Cl. 176—87 **20 Claims**



As a safety measure relating to pressure vessels of nuclear reactors, there is provided a safety tank surrounding the pressure vessel at least in its upper range and a guard ring overlapping the upper edge of the safety tank. The guard ring is disconnectably secured by means of bolts extending within the safety tank to a carrier ring situated under the nipples of the pressure vessel.

3,775,252

PROCESS FOR CULTIVATING ACETIC ACID-CONTAINING YEASTS

Norma A. Kinsel, Pittsburgh, and William W. Leathen, Wexford, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sept. 17, 1971, Ser. No. 181,557

Int. Cl. C12c *11/14*

U.S. Cl. 195—30 **14 Claims**

A process for cultivating an acetic acid-consuming yeast includes the following steps:

1. An acetic acid-consuming yeast is added to a growth-supporting mixture of aqueous nutrient medium, acetic acid at a low concentration level and gas containing free oxygen.

2. Aerobic culturing of the yeast is initiated with no noticeable stationary growth stage by incrementally introducing small amounts of acetic acid into the fermentation mass either continuously or intermittently throughout the growth period of the micro-organism.

3,775,253

WATER-INSOLUBLE CARRIER-BOUND PROTEINS

Jaworek Dieter, Tutzing, Upper Bavaria; Gruber Wolfgang, Gartshausen, and Bergmeyer Hans Ulrich, Tutzing, Upper Bavaria, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Division of Ser. No. 9,442, Feb. 6, 1970. This application June 15, 1972, Ser. No. 263,058

Claims priority, application Germany, Feb. 19, 1969, P 19 08 290.7

Int. Cl. C07g *7/00*, *7/02*

U.S. Cl. 195—63 **8 Claims**

Water insoluble biologically active proteins are bound on novel copolymers consisting of (a) acrylamide (b) ethylene-maleic acid or its anhydride and/or (c) maleic acid and/or its anhydride and (d) N,N'-methylene-bis-acrylamide or ethylene diacrylate in a weight ratio a:b:c:d of 3 : 0.5 – 1.5 : 0.05 – 4 : 0.075 – 0.9, the weight ratio $a : (b+c)$ being not more than 4, to provide compositions which are outstanding in their ability to yield up the bound protein, and with which precise substrate reactions can be carried out.

3,775,254

PURIFICATION OF LOW MOLECULAR WEIGHT ENZYMES

Ralph William Buetow, Wausau, Wis., assignor to Johan Bjorksten, Madison, Wis.

Filed Oct. 16, 1970, Ser. No. 81,391

Int. Cl. C07g *7/02*

U.S. Cl. 195—66 R **11 Claims**

For preparation of an enzyme, the enzyme containing solution is passed through an ultrafilter passing only material having a molecular weight lower than 10,000; a soluble form of a bivalent non-toxic cation is added to it, and this cation is precipitated as a carbonate in the enzyme solution; the enzyme is selectively adsorbed to the said carbonate when so precipitated. The carbonate with the adhered enzyme is recovered for example on a filter or by centrifugation and may be washed and/or dried as such, or treated with acid for recovery of the pure enzyme. The metal carbonate complex of the enzyme is particularly suitable for therapeutic purposes because of its high ability and the ready availability of the enzyme upon contact with stomach acid.

3,775,255
L-TRANS-2-AMINO-4-(2-AMINOETHOXY)-3-BUTENDIC ACID

Julius Berger; David Pruess, both of Passaic, and James Parnell Scannell, Bloomfield, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

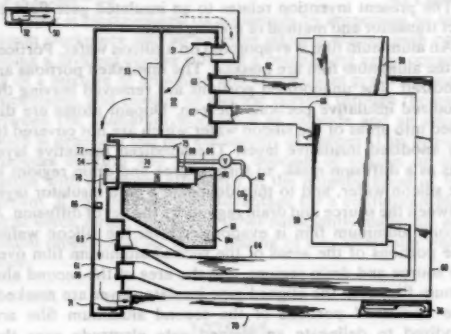
Division of Ser. No. 198,449, Nov. 12, 1971. This application Mar. 29, 1973, Ser. No. 346,229
Int. Cl. C12b *1/00*
U.S. Cl. 195—80 3 Claims

A new antimicrobial, anthelmintic substance, L-trans-2-amino-4-(2-aminoethoxy)-3-butenoic acid, prepared by a new species of Streptomyces is disclosed.

3,775,256
ANAEROBIC BACTERIA LABORATORY

Max K. Risinger, 2716 Harrington Dr., Decatur, Ga.

Filed Oct. 14, 1971, Ser. No. 189,435
Int. Cl. C12b *1/00*
U.S. Cl. 195—108 12 Claims

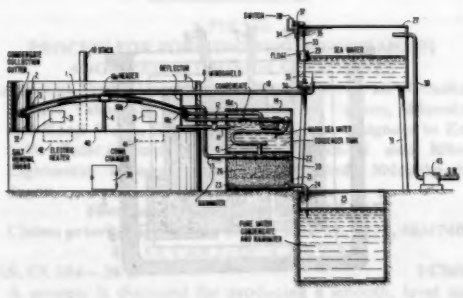


Apparatus for receiving and examining anaerobic bacteria. The apparatus provides separate anaerobic areas for culture work or study, for culture incubation, and for refrigerated culture storage. The atmosphere within the apparatus is recirculated for conditioning, including O_2 removal by passage through oxygen adsorption material which can be purged to expel oxygen removed from the anaerobic atmosphere.

3,775,257
SOLAR DISTILLATION APPARATUS

John Lovrich, Nanuet, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,271
Int. Cl. B01b ; B01d *3/00;* F28b
U.S. Cl. 202—234 5 Claims



A solar distillation apparatus for converting sea water into fresh water. A transparent dome condenses solar energy and heats sea water in a container beneath it. The periphery of the dome is provided with a continuous channel for conveying vaporized liquid into a condenser tank. Means are included for collecting rain water. A sea water supply tank is provided with a demand valve for feeding to a main heating chamber. The distilland is filtered and fed to an underground reservoir.

3,775,258
PURIFICATION OF ADIPONITRILE

Bernard John Kershaw, Kingston, Ontario, Canada, assignor to Du Pont of Canada Limited, Montreal, Quebec, Canada

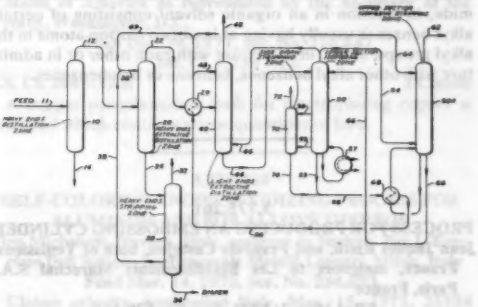
Filed Apr. 27, 1972, Ser. No. 248,079
Int. Cl. B01d *3/34*
U.S. Cl. 203—29 5 Claims

A process is provided for hydrolyzing 2-cyanocyclopentylideneimine (CPI) to 2-cyanocyclopentanone by contacting the CPI with an acidic catalyst and water at a temperature of at least 140° C. Preferred catalysts are silica-alumina, crystalline aluminosilicates, boron phosphate and titania-alumina. The process is particularly useful in the separation of CPI impurity from hexamethylenediamine.

3,775,259
ISOPRENE RECOVERY PROCESS BY PLURAL EXTRACTIVE DISTILLATIONS

Dante H. Sarno, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Aug. 26, 1971, Ser. No. 175,233
Int. Cl. C07c *7/08;* B01d *3/40;* C07c *11/18*
U.S. Cl. 203—54 7 Claims

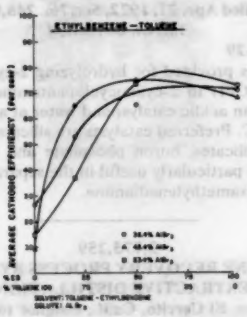


Isoprene is recovered in high purity from a cyclopentadiene-containing C_5 fraction in a two-stage extractive distillation in the presence of a selective polar solvent. Substantially all of the cyclopentadiene is removed in the first or heavy ends extractive distillation zone wherein the concentration of the extractive distillation solvent is maintained at from 5 to 40 mole percent to thereby recover substantially all of the isoprene and more volatile hydrocarbons as overhead products from the zone. Isoprene is then separated from this overhead C_5 fraction in a second or light ends extractive distillation zone and is recovered in the fat solvent from which it is recovered in an isoprene stripping zone. A high solvent concentration is maintained in the upper section of the isoprene stripping zone and cyclopentadiene is recovered from a lower section of the zone via a side draw. The dimer content of the solvent circulating in the light ends extractive distillation zone and isoprene stripping zone is controlled by recycling a portion of the stripped solvent from the bottom of the isoprene stripping zone to the heavy ends extractive distillation zone wherein the recovered dimer is rejected in the bottoms product. Solvent is recovered from that bottoms product in a heavy ends stripping zone as a vapor side draw.

3,775,260
ELECTROPLATING ALUMINUM

Guido A. Capuano, Boucherville, Quebec, and William G. Davenport, St. Lambert, Quebec, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Apr. 27, 1971, Ser. No. 137,883
Int. Cl. C23b 5/00
U.S. Cl. 204—14 R 33 Claims

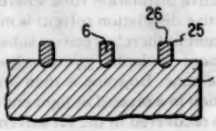


An improved electrolyte for use in the electrodeposition of aluminum or an alloy thereof as a coating on an electrically conducting preferably metallic substrate which electrolyte comprises an aluminum halide, in particular aluminum bromide, in solution in an organic solvent consisting of certain alkyl benzenes usually having at least two carbon atoms in the alkyl groups, alone, in admixture with each other or in admixture with other alkyl benzenes, benzene or halobenzenes.

3,775,261
PROCESS FOR PRODUCING AN EMBOSSING CYLINDER

Jean Jaques Rieth, and Francois Castejon, both of Venissieux, France, assignors to Les Etablissements Marechal S.A., Paris, France

Filed Mar. 3, 1971, Ser. No. 120,607
Claims priority, application France, Mar. 5, 1970, 7007853
Int. Cl. C23b 5/48, 5/56
U.S. Cl. 204—15 4 Claims

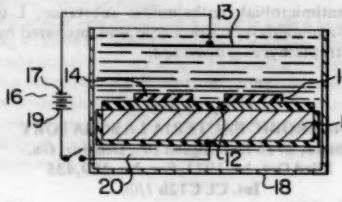


A cylinder is provided with a photographic emulsion which is then exposed to light as a function of a desired pattern. Portions of the exposed emulsion are removed from the cylinder as a function of the exposure obtained in the step of exposing the emulsion to light. The bared portions of the cylinder are then electroplated to provide lands as a function of a pattern to be embossed onto articles.

3,775,262
METHOD OF MAKING INSULATED GATE FIELD EFFECT TRANSISTOR

Norman E. Heyerdahl, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Feb. 9, 1972, Ser. No. 224,796
Int. Cl. C23b 5/48
U.S. Cl. 204—15 6 Claims



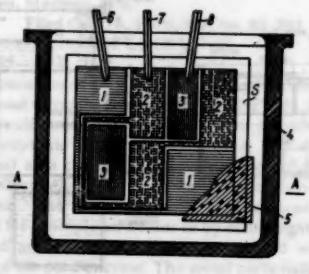
The present invention relates to an insulated gate field effect transistor and method of making same.

An aluminum film is evaporated on a silicon wafer. Portions of the aluminum film are masked. The unmasked portions are anodized. The unanodized portions are removed leaving the anodized insulative portions thereon. Dopant atoms are diffused into areas of the silicon wafer which are not covered by the anodized insulative layer. The anodized insulative layer acts as a diffusion mask, to form source and drain regions in the silicon wafer, and to thus delineate a gate insulator layer between the source and drain regions by the act of diffusion. A second aluminum film is evaporated over the silicon wafer. The portions of the areas of the second aluminum film over the source and drain regions, and the area of the second aluminum film over the aligned gate insulator layer are masked. The unmasked portions of the second aluminum film are anodized to delineate an aligned gate electrode over the aligned gate insulator layer and to delineate source and drain electrodes in contact with the source and drain regions. An insulated gate field effect transistor is thus formed.

3,775,263
ARTICLE WITH A MULTICOLORED SURFACE DECORATION THEREON PRODUCED BY LIGHT INTERFERENCE EFFECTS

Nadezhda Vasilievna Rjumshina, Sovetskaya, 13, Solntsevo; Gennady Fedorovich Vasiliev, K-482, Korpus 331 kv. 93, and Georgy Markovich Vozlinsky, K-482 Korpus 447, kv. 30, both of Moscow, all of U.S.S.R.

Division of Ser. No. 702,877, Feb. 5, 1968, Pat. No. 3,619,385.
This application July 19, 1971, Ser. No. 163,684
Int. Cl. C23b 5/48; B44c 1/04
U.S. Cl. 204—18 R 4 Claims



A polychromatic image is formed on the surface of an article by depositing on a solid dielectric layer a thin film of a uni-

laterally-conducting metal or alloy thereof to a thickness of at least 500 A, followed by dividing the film into separate areas in conformity with the shape of the picture to be reproduced, the areas being electrically insulated from one another. Thereafter the areas are subjected to selective anodic oxidation at a constant current density of less than 10 mA/cm² and at working voltages which vary from one area to another in a range of 5 to 250 volts to produce transparent anodic oxide films on the areas of thicknesses between 100 to 6,000 A, to impart different coloration to the areas by light interference phenomena.

3,775,264

PLATING COPPER ON ALUMINUM

Nanbhai Rustomji Bharucha, Laval, Quebec, and Mohammad Barakat Ilahi Janjua, Pointe Claire, Quebec, both of Canada, assignors to Canada Wire and Cable Company Limited, Toronto, Ontario, Canada

Filed Mar. 9, 1972, Ser. No. 233,361

Claims priority, application Belgium, Nov. 10, 1971, 110362

Int. Cl. C23b *5/60, 5/50, 5/18*

U.S. Cl. 204—28 **49 Claims**

Copper is electroplated on aluminum by immersing an aluminum workpiece into an aqueous alkaline plating bath containing a divalent copper salt and a complexing agent consisting of a mixture of an amine and ammonia in predetermined proportions, and passing an electric current through the bath between the aluminum workpiece as cathode and an anode which is generally but not exclusively of copper. This process produces uniform and adherent deposits of copper on aluminum with a current efficiency in the neighborhood of 100 percent. It can be used with advantage for a continuous plating of wires, strips, sheets and other sufficiently malleable aluminum objects and for batch plating of any aluminum workpiece.

3,775,265

METHOD OF PLATING COPPER ON ALUMINUM

Nanabhai Rustomji Bharucha, Chomedey-Laval, Quebec, and Mohammad Barakat Ilahi Janjua, Pointe Claire, Quebec, both of Canada, assignors to Canada Wire and Cable Limited, Toronto, Ontario, Canada

Filed Sept. 25, 1970, Ser. No. 75,673

Claims priority, application Canada, May 25, 1970, 83,600

Int. Cl. C23b *5/18, 5/48*

U.S. Cl. 204—33 **25 Claims**

Copper is electroplated directly onto aluminum by immersing an aluminum workpiece in an aqueous alkaline plating bath containing a divalent copper salt and an amine capable of complexing the copper, and passing an electric current through the plating bath using the workpiece as the cathode. The deposits which are obtained are strongly adherent and the method avoids the need for complicated mechanical or chemical pretreatment of the workpiece.

3,775,266

PROCESS FOR FORMING RESINOUS FILMS ON ANODIZED ALUMINUM SUBSTRATES

Katsushige Ikeda; Isao Hayashi; Takashi Kato, all of Osaka; Toshiro Takahashi, Shizuoka; Toshihiro Nagano, Shizuoka, and Kenji Wada, Shizuoka, all of Japan, assignors to Kuboko Paint Company, Limited, Osaka-shi and Riken Lightmetal Industry Company, Limited, Shizuoka-shi, Japan

Filed June 28, 1972, Ser. No. 267,045

Claims priority, application Japan, June 29, 1971, 46/47404

Int. Cl. C23f *17/00;* **C23b** *9/02*

U.S. Cl. 204—38 E **1 Claim**

A process is disclosed for producing a smooth, level and firmly adhered resinous film on an aluminum or aluminum alloy surface. The process is carried out at certain temperatures to reduce the viscosity of water-soluble resin coatings.

3,775,267

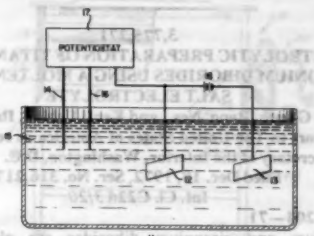
ELECTRODEPOSITION OF RHODIUM

Joseph Yahalom, Haifa, Israel, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 4, 1973, Ser. No. 321,026

Int. Cl. C23b *5/24*

U.S. Cl. 204—47 **3 Claims**



A technique is described for electroplating rhodium utilizing a soluble rhodium anode. The technique involves maintaining a constant rhodium concentration in the electrolyte by continuous dissolution of a rhodium anode, such dissolution being effected by imposing a pulsed signal on the anode.

3,775,268

USE OF LEAD IN A NONORGANIC-CONTAINING COPPER PYROPHOSPHATE BATH

Ernest Fino, Waltham; William F. Moloney, Jr., Lowell, and Emil Toledo, Natick, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1971, Ser. No. 214,447

Int. Cl. C23b *5/18*

U.S. Cl. 204—52 R **2 Claims**

A copper pyrophosphate bath for electroplating copper is provided which contains minor quantities of lead.

3,775,269

SELF-COLORING ANODIC OXIDIZING PROCESS FOR ALUMINUM AND FOR ALLOYS THEREOF

Ciro Micheletti, Novara, Italy, assignor to Societa' Per L'Esercizio Dell'Istituto Sperimentale Metalli Leggeri, Milan, Italy

Filed Mar. 14, 1972, Ser. No. 234,683

Claims priority, application Italy, Mar. 15, 1971, 21754 A/71

Int. Cl. C23b *9/02*

U.S. Cl. 204—58 **1 Claim**

An improved self-coloring anodic oxidation process for aluminum and its alloys utilizing an electrolytic bath in which the electrolytic cell is subdivided by a porous baffle into an anodic and a cathodic compartment, the improvement comprising maintaining the electrolytic solution in the cathodic compartment at a temperature lower than that of the anodic compartment.

3,775,270

PROCESS FOR THE ELECTROLYTIC REFINING OF POTASSIUM

Karl Ziegler, Kaiser-Wilhelm-Platz 1, and Herbert Lehmkuhl, both of Mulheim/Ruhr, Germany, assignors to said Ziegler, by said Lehmkuhl

Filed Jan. 14, 1971, Ser. No. 106,593

Claims priority, application Germany, Jan. 4, 1970, P 20 01 409.9

Int. Cl. C22d *1/06, 3/06*

U.S. Cl. 204—60 **2 Claims**

A process for refining potassium electrolytically using an organo-aluminium potassium complex compound as electrolyte

in which the electrolyte used contains potassium-aluminium tetra-alkyl compounds and the electrolysis is effected at a temperature of not above 70°C. In particular the electrolysis is carried out at a temperature within the range of 64° – 70°C and the melting point of the electrolyte is lowered to this range or below it by the addition of a potassium-aluminum-monoalkoxyalkyl compound or an inert solvent or diluent.

3,775,271

ELECTROLYTIC PREPARATION OF TITANIUM AND ZIRCONIUM DIBORIDES USING A MOLTEN, SODIUM SALT ELECTROLYTE

John M. Gomes, Reno, Nev., and Kenji Uchida, Ibaragi, Japan, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 18, 1972, Ser. No. 316,217
Int. Cl. C22d *3/20*
U.S. Cl. 204—71 **10 Claims**

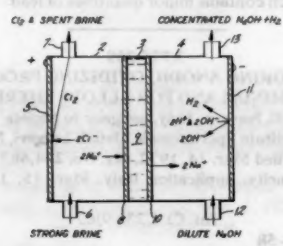
Titanium and zirconium diborides are electrolytically synthesized using a molten sodium salt electrolyte containing cryolite, a sodium alkali, a sodium borate, a sodium halide and a source compound to supply the titanium or zirconium. Substantial refining occurs during the synthesis allowing the use of rutile concentrates as a source of titanium and zircon concentrates as a source of zirconium. The synthesis may be accomplished in a cell open to the atmosphere to produce substantially pure titanium and zirconium diborides.

3,775,272

MERCURY DIAPHRAGM CHLOR-ALKALI CELL AND PROCESS FOR DECOMPOSING ALKALI METAL HALIDES

Peter A. Danna, Milford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 25, 1972, Ser. No. 229,279
Int. Cl. C01d *1/06*; C01b *7/06*
U.S. Cl. 204—98 **11 Claims**



An electrolytic cell for electrolysis of alkali metal halides having a diaphragm structure comprising cation permeable diaphragms enclosing an immobilized continuous phase of liquid alkali metal amalgam.

3,775,273

CADMIUM ELECTRODES

Ronald L. Haines; Ian H. S. Henderson, both of Ottawa, Ontario, Canada, and Franklin Sievenpiper, Brandon, Fla., assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence

Continuation-in-part of Ser. No. 1,335, Jan. 8, 1970, abandoned. This application June 26, 1972, Ser. No. 266,240
Int. Cl. C22d *1/22*; H01m *43/04*
U.S. Cl. 204—115 **13 Claims**

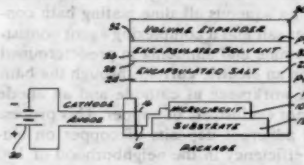
The invention relates to a process for the preparation of sponge cadmium electrode material which comprises the steps of compressing the mixture of cadmium oxide and a finely divided inert electronic conductor at a pressure between about 1 psi and 100 psi, and subsequently electrolytically reducing the cadmium oxide to metallic cadmium in an alkaline electrolyte. Preferably the cadmium oxide is used in the form of a powder having a particle size between about 50 microns and 150 microns while the electrolytic conductor is preferably finely divided nickel powder or a metal in filamentary form such as steel wool, nickel wool, or electrolytic copper wool and is furthermore preferably used in a proportion amounting to between 5 and 45 percent by weight of the total mixture. Particularly good results are obtained when the compressing pressure is between about 1 and 4 psi.

3,775,274

ELECTROLYTIC ANTICOMPROMISE PROCESS

John B. Rust, Malibu, and Gary S. Smolker, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 30, 1970, Ser. No. 51,312
Int. Cl. B01k *3/00*
U.S. Cl. 204—146 **5 Claims**



Microelectronic devices and circuits, such as are found in semiconductor and hybrid microelectronics, are rendered unrecognizable and are destructed by means of an electrochemical reaction comprising an electrochemical or chemical etching and/or de-plating process.

3,775,275

PHOTONITROSATION OF NORMAL PARAFFINS

Orville W. Rigdon, Groves; Robert S. Edwards, and Edward H. Holst, both of Nederland, all of Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 124,473, March 15, 1971, Pat. No. 3,717,561, which is a continuation-in-part of Ser. No. 674,612, Oct. 11, 1967, Pat. No. 3,578,575. This application May 6, 1971, Ser. No. 141,036
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 XN **18 Claims**

A process for producing normal paraffin oximes and, in particular, normal paraffin oximes having from 14 to 50 carbon atoms wherein a C_{14} to C_{50} normal paraffin is photochemically reacted in the presence of a halogenated organic solvent with a nitrosating agent under the influence of light in the wavelength of 200 to 760 millimicrons and contacting the reaction product with a polybasic acid such as sulphuric or phosphoric acid. The oximes are subsequently recovered by neutralizing the acid treated product and separating the oxime.

3,775,276

PREPARATION OF LIQUID BROMINE-TERMINATED POLYMERS USING RADIATION AND A DIBROMO DICHLORO ALKANE

Alan A. Csontos, Norton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 155,325, June 21, 1971, Pat. No. 3,730,862. This application Jan. 12, 1973, Ser. No. 323,208
Int. Cl. B01j *1/10*
U.S. Cl. 204—163 R **4 Claims**

Liquid bromine-terminated polymers are directly prepared as by polymerizing one or more acrylates, acrylates in com-

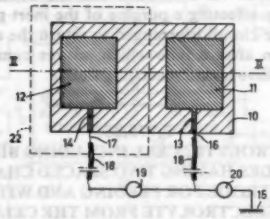
bination with isoprene, or butadiene with acrylonitrile using a combination of ultra-violet light and a dibromo-dichloro alkane containing at least two carbon atoms only as the polymerization initiator. These polymers are vulcanized with polyfunctional amines as curing agents to form solid elastomers, and are useful as base polymers for caulks, sealants, potting compounds, and like formulations.

3,775,277

METHOD OF DETERMINING THE THICKNESS OF A LAYER OF DIELECTRIC MATERIAL DURING ITS GROWTH

Jean Pompei, Evreaux, and Yannick Le Vacon, Rueil, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,023
Claims priority, application France, May 11, 1971, 7116954
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **2 Claims**



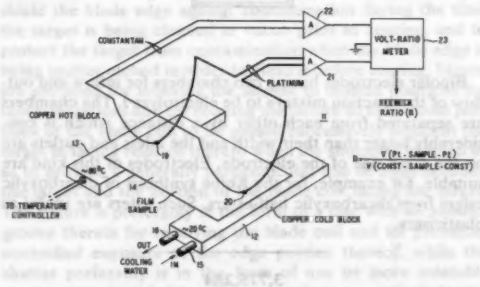
A method of and a device for determining the thickness of a thin layer of dielectric material during deposition of this layer by means of cathode sputtering. The thickness of the layer is calculated by means of voltages which are measured by means of a detector which is arranged in the plasma of the discharge.

3,775,278

TECHNIQUE FOR THE FABRICATION OF THIN FILM RESISTORS

Donald Henry Hensler, Emmaus, Pa.; Alexander Robert Ross, Piscataway, N.J.; Charles Archibald Steidel, Allentown, Pa.; Murray Lawrence Trudel, Whitehall, Pa., and Theodore Wallace Zuber, Jr., Macungie, Pa., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 22, 1972, Ser. No. 237,047
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **2 Claims**



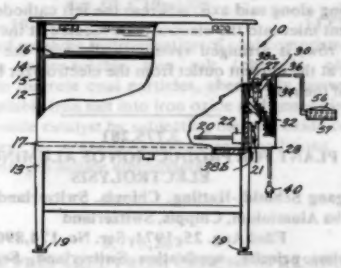
A technique for preparing tantalum aluminum and tantalum nitride thin film resistors evidencing minimum aging and satisfactory anodization characeritstics is described. The procedure involves measuring the thermoelectric power of deposited films subsequent to the deposition process and maintaining this parameter within a prescribed range in subsequent depositions by varying the nitrogen or aluminum content of the sputtered film.

3,775,279

APPARATUS FOR DETARNISHING SILVER

Eugene C. Boley, 7226 Hickory Hill Ln., Huntsville, Ala.

Filed July 15, 1971, Ser. No. 163,015
Int. Cl. B01k *3/00*; B23p *1/00*
U.S. Cl. 204—242 **4 Claims**



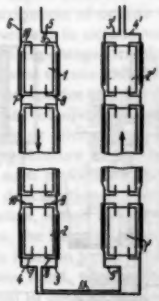
An apparatus for electrolytically cleaning articles including a double walled tank covered by a hinged lid with a runoff returning strip, and having an electrically powered supply which is readily detachable from the tank. The tank includes a recessed grid which receives an electrode below the inner surface of the tank, the other electrode is attached by flexible cord to the power supply and hooks to the article being cleaned. Finally, an electroplating wand is also connected to the power supply.

3,775,280

SYSTEM OF CURRENT-SUPPLY BUSES IN ALUMINUM-PRODUCING ELECTROLYZERS

Vladimir Pavlovich Nikiforov, Moskovsky prospekt, 205, kv. 432; Nikolai Pavlovich Budkevich, Belgradskaya ulitsa, 38, korpus 5, kv. 40; Semen Emilievich Gefter, ulitsa Chaikovskogo, 18, kv. 6; Svetozar Vladimirovich Evdokimov, Lesnoi prospekt, 13/8, kv. 5; Ilya Genrikhovich Kil, Gavanskaya ulitsa, 37, kv. 61; Valentin Ignatievich Ryabov, prospekt Nauki, 12, kv. 208; Alexandr Nikolaevich Smorodinov, Bukharestskaya ulitsa, 31, korpus 3, kv. 55; Igo Kirillovich Tsybukov, Tikhoretsky prospekt, 9, korpus 10, kv. 54, and Anatoly Mikhailovich Tsyplakov, prospekt Kima, 30, kv. 74, all of Leningrad, U.S.S.R.

Filed Aug. 17, 1971, Ser. No. 172,422
Claims priority, application U.S.S.R., Jan. 27, 1971, 1,615,566
Int. Cl. C22d *3/02*
U.S. Cl. 204—243 M **2 Claims**



A system of current-supply buses in aluminum-producing electrolyzers located at the beginning and at the end of a group of electrolyzers arranged lengthwise in a row, incorporates stacks of cathode buses located at the left and at the right with respect to a longitudinal axis of the row of elec-

trolyzers along the direction of the current flow through the electrolyzers. The system includes at least two rows of series-connected electrolyzers, and according to the invention, the left and the right cathode stacks in each of the electrolyzers located at the end of the row at the current outlet, include portions running along the transverse wall of the electrolyzers towards the longitudinal axis thereof and continuing portions running along said axis, whereas the left cathode stack at the current inlet into the electrolyzers located at the beginning of each row, is arranged symmetrically with the left cathode stack at the current outlet from the electrolyzer located at the end of the row.

3,775,281

PLANT FOR PRODUCTION OF ALUMINUM BY ELECTROLYSIS

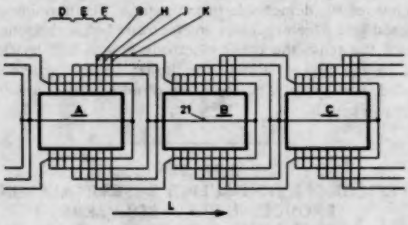
Wolfgang Schmidt-Hatting, Chippis, Switzerland, assignor to Swiss Aluminium, Chippis, Switzerland

Filed Aug. 25, 1971, Ser. No. 174,890

Claims priority, application Switzerland, Sept. 1, 1970, 13100/70

Int. Cl. C22d *3/02, 3/12*

U.S. Cl. 204—244 **1 Claim**



In a plant for production of aluminum by electrolysis comprising a plurality of cells in series, a specified arrangement of the connecting means from cell to cell in order to reduce the horizontal components of the electric current in the cells.

3,775,282

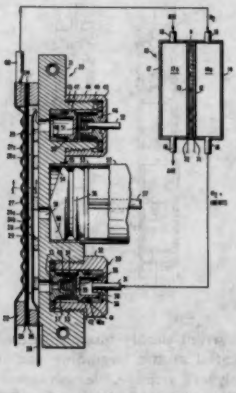
ELECTRO-CHEMICAL ION EXCHANGE MEMBRANE PURGE PUMP

Donald William Craft, Melrose, and Francis J. Porter, Jr., Beverly, both of Mass., assignors to General Electric Company, Wilmington, Mass.

Division of Ser. No. 756,212, Aug. 29, 1968, Pat. No. 3,615,842. This application Aug. 17, 1970, Ser. No. 64,528

Int. Cl. B01d *53/22*

U.S. Cl. 204—266 **11 Claims**



A purge pump is arranged for removing inert gases and impurities from the reactant gases in fuel cells or fuel cell systems. Normal operation of fuel cells results in the accumulation of inert gases in the reactant gases after a period of operation, ultimately tending to blanket an electrode, causing the performance of the fuel cell to deteriorate. The purge pump, which is arranged to remove such materials at intervals, includes a housing incorporating an ion exchange membrane with electrodes on opposite sides thereof. Current collectors engaging the electrodes are formed of corrugated shape, the corrugations of one collector being transverse to those of the other collector. A chamber is provided adjacent one electrode for accumulating inert gases received from the fuel cell system. The housing of the purge pump has incorporated therewith an inlet valve at one end of the chamber for conducting inert gases from the system to the chamber and a second valve at the other end of the chamber for effecting discharge of inert gases from the chamber at intervals. When the inert gases accumulate in the chamber to an extent affecting performance by a predetermined amount an associated electrical circuit causes reversal of current through the purge pump. This results in an increase in pressure in the chamber causing the inlet valve to close and the discharge valve to open, thereby effecting a purging of the inert gases from the chamber. The circuit is arranged to return the system to normal operation after a time which insures complete purging without excessive loss of reactant gases.

3,775,283

ELECTROLYTIC CELL INCLUDING BIPOLAR ELECTRODES HAVING TWO SPACED CHAMBERS IN EACH ELECTRODE FOR FEEDING AND WITHDRAWING ELECTROLYTE FROM THE CELL

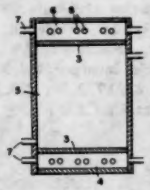
Wolfgang Eisele; Heinz Nohe; Hans Von Ammon; Fritz Beck, and Hubert Suter, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed July 29, 1971, Ser. No. 167,207

Claims priority, application Germany, Aug. 8, 1970, P 20 39 590.8

Int. Cl. B01k *3/04*

U.S. Cl. 204—268 **6 Claims**



Bipolar electrodes having two chambers for inflow and outflow of the reaction mixture to be electrolyzed. The chambers are separated from each other by a distance which is considerably larger than their width and the inlets and outlets are on the same side of the electrode. Electrodes of this kind are suitable, for example, for the Kolbe synthesis of dicarboxylic esters from dicarboxylic half-esters. Such esters are useful as plasticizers.

3,775,284

NON-PASSIVATING BARRIER LAYER ELECTRODES

John E. Bennett, Painesville, and Kevin J. O'Leary, Cleveland Heights, both of Ohio

Continuation-in-part of Ser. No. 22,021, March 23, 1970, abandoned. This application Jan. 28, 1971, Ser. No. 110,775

Int. Cl. B01k *3/06*

U.S. Cl. 204—290 F **7 Claims**

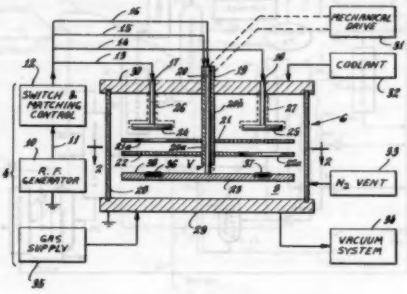
An electrode is provided which resists passivation over long periods of time and hence which is especially well suited for

use as an oxygen anode. The electrode comprises 1) an electrically conductive supporting substrate, 2) an intermediate, electrically conductive, barrier layer and 3) an electrocatalytically active, solid solution-type, outer coating. The barrier layer is selected from the group consisting of platinum-iridium alloys and oxides of cobalt, manganese, palladium, lead and platinum.

3,775,285
APPARATUS FOR COATING CONTINUOUS STRIPS OF RIBBON RAZOR BLADE MATERIAL

George C. Lane, Danbury, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 18, 1971, Ser. No. 144,510
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 6 Claims



A method and apparatus for placing extremely thin finish coatings on previously sharpened coils of band or ribbon type razor blade material prior to cutting such strips into shorter lengths for eventual inclusion in magazine fed ribbon blade safety razors. The method includes winding a relatively great length of ribbon blade into a helix or coil with an open center, fitting the coil within a special fixture, and placing the coil and fixture within an evacuable chamber wherein one or more coating materials are sputtered onto the blade edge in extremely thin layers under carefully controlled conditions. The chamber, in addition to conventional vacuum system components, includes at least one, and sometimes plural electrodes, each adapted to receive thereover a target plate containing a coating of the material to be sputtered therefrom and onto the blade edge. A shutter arrangement is provided to shield the blade edge against contamination during the time the target is being cleaned in vacuo prior to coating, and to protect the target from contamination when the blade edge is being sputter etched in order to clean it before coating. Means are provided for indexing the shutter to desired positions for these operations and for rotating the fixture so as to cause portions of the blade coil to be passed successively adjacent the target in facing relation thereto when the shutter is indexed so as to provide a generally perpendicular line of sight between the target and the portion of the blade coil facing the target. The fixture is preferably in the form of a disc with an annular groove therein for receiving the blade coil and for providing controlled exposure of the edge portion thereof, while the shutter preferably is in the form of one or more rotatably mounted apertured plates. The sputtering process includes the formation of a plasma within the evacuated chamber by the ionization of an otherwise inert or non-reactive gas; the coating materials may be metals or alloys as well as dielectric materials such as organic plastics applied to the edge for imparting lubricity thereto. Coating thicknesses range from about 50 Angstroms or less up to several hundred Angstroms or more, but, in any case, are insufficiently thick to dull the previously sharpened blade edge.

3,775,286
HYDROGENATION OF COAL

Dilip Kumar Mukherjee; Priya Bandhu Chowdhury; Jugal Kishore Sama; Amarendra Nath Basu; Nitya Gopal Basak, and Adinath Lahiri, all of Bihar, India, assignors to Council of Scientific Industrial Research, New Delhi, India

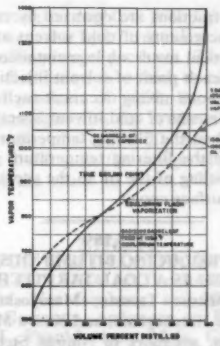
Filed Sept. 7, 1971, Ser. No. 178,482
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 11 Claims

A process of catalytic hydrogenation of coal comprising impregnating a water-soluble iron salt (chloride, nitrate, sulphate) into discrete coal particles, chemically converting such water-soluble iron salt into iron oxide and generating activated iron oxide catalyst by subjecting the iron oxide coated coal particles to pressure-temperature conditions in a hydrogen-hydrogen sulfide atmosphere.

3,775,287
GASOLINE PREPARED FROM CRACKING RESIDUAL OIL

Millard C. Bryson, Conway; Joel D. McKinney, Indiana; Robert A. Titmus, Pittsburgh, and Frederick K. White, Allison Park, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 10, 1972, Ser. No. 216,700
Int. Cl. C10g *11/04*
U.S. Cl. 208—17 14 Claims



In fluid catalytic riser cracking of a gas oil with a zeolite catalyst the inclusion of controlled amounts of residual oil in the feed results in an improvement in octane value and/or improvement in the distribution of octane value of the gasoline product. This improvement in octane value occurs primarily in the particular boiling range fractions of the gasoline product having the lowest octane value. However, residual oil is relatively difficult to vaporize and the extent of its vaporization will depend on the equilibrium flash vaporization temperature at the bottom or inlet of the riser. The equilibrium flash vaporization temperature at the bottom of the riser is generally limited by such process necessities as avoidance of catalyst sintering or deactivation and/or avoidance of excessive catalyst to oil ratios, which can adversely affect product selectivity. Therefore, the quantity of residual oil in the feed must be controlled in relation to the equilibrium temperature in order to, on the one hand, vaporize and crack a sufficient quantity of residual oil to obtain the octane improvement effect, while, on the other hand, keeping the quantity of residual oil which remains unvaporized below a specified level. It is shown that at a fixed equilibrium flash vaporization temperature the quantity of residual oil which is vaporized cannot be increased merely by large increases in the proportion of residue in the feed.

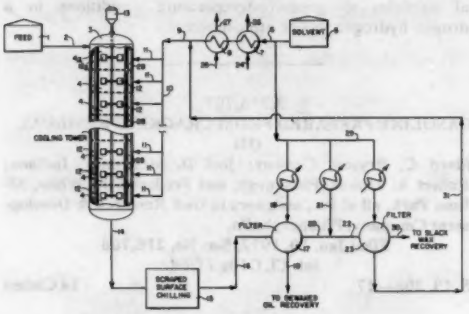
3,775,288
COMBINATION OF DILUTION CHILLING WITH SCRAPED SURFACE CHILLING IN DEWAXING LUBRICATING OILS

John F. Eagen; David A. Gudelis, both of Sarnia, Ontario, Canada, and Stephen F. Perry, Westfield, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 161,293, July 9, 1971, abandoned, which is a continuation of Ser. No. 36,276, May 11, 1970, abandoned. This application May 26, 1972, Ser. No. 257,435

Int. Cl. C10g *43/08*

U.S. Cl. 208—33 16 Claims



Lubricating oil fractions are dewaxed by contacting them with successive increments of cold solvent at a plurality of points along a vertical tower while maintaining a zone of intense agitation at each point of solvent injection so that substantially instantaneous mixing occurs at each point, continuing the chilling by means of cold solvent injection until a temperature greater than the filtering temperature but less than about 35°F. above the filtering temperature is reached and completing the cooling of the oil to the separation temperature in a scraped-surface cooler.

3,775,289
METHOD FOR PRODUCING BITUMINOUS SUBSTANCE SUCH AS A COAL TAR PITCH

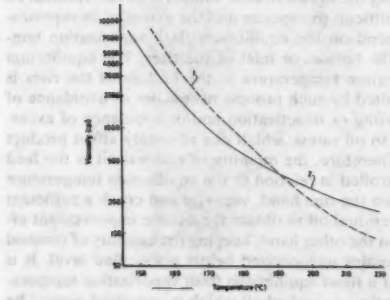
Chiyozo Kishi; Mitsuo Tatsuta; Masayoshi Nago; Kanji Kibuishi; Yoshio Hatakeyama, and Kaoru Miyakawa, all of Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 5, 1971, Ser. No. 196,096

Claims priority, application Japan, Nov. 10, 1970, 45/98979; Nov. 10, 1970, 45/98980; Nov. 21, 1970, 45/102970

Int. Cl. C10c *3/02*

U.S. Cl. 208—45 2 Claims



A method for producing bituminous substance such as coal tar pitch which comprises adding sulfuric acid to coal tar produced by a high temperature dry distillation of coal and a bituminous substance produced from the coal tar, then adding petroleum heavy oil to the mixture to precipitate and separate pitch component.

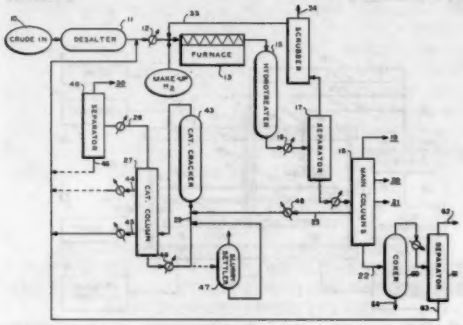
3,775,290
INTEGRATED HYDROTREATING AND CATALYTIC CRACKING SYSTEM FOR REFINING SOUR CRUDE

Alan H. Peterson, Littleton, and Frank L. Dormish, Denver, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed June 28, 1971, Ser. No. 157,528

Int. Cl. C10g *37/00*

U.S. Cl. 208—50 23 Claims



Desalted crude oil plus a recycle stream from a catalytic cracking unit, e.g., catalytic gas oil (heavy catalytic cycle oil), with or without other cat cracking products, e.g., gasoline and light cycle oil, are mixed and hydrotreated together in a single operation; then fractionated into the desired fractions. Optionally, portions of the products from said hydrotreater can be reformed and/or coked with liquid fractions from said coker optionally being recycled to join the crude oil feed to the hydrotreater.

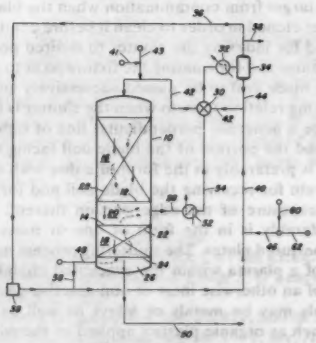
3,775,291
PRODUCTION OF JET FUEL

Morgan Chuan-Yuan Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Sept. 2, 1971, Ser. No. 177,439

Int. Cl. C10g *23/00*

U.S. Cl. 208—57 15 Claims



Jet fuel, particularly suitable for use in supersonic aircraft, is produced from a mixture of a petroleum fraction boiling

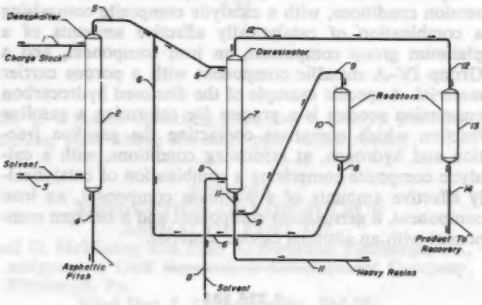
substantially in the kerosene range and a mixture of branched chain olefinic hydrocarbons having an average of nine to 16 carbon atoms per molecule. The mixture is passed through two hydrogenation zones in series, co-currently with hydrogen in the first, countercurrent to hydrogen in the second.

3,775,292

COMBINATION PROCESS FOR THE CONVERSION OF HYDROCARBONACEOUS BLACK OIL

Charles H. Watkins, Arlington Hgts., Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 1, 1972, Ser. No. 277,025
Int. Cl. C10g *13/00*
U.S. Cl. 208—86 **8 Claims**



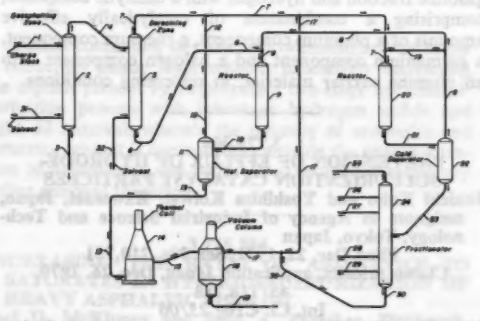
Maximum conversion of black oil charge stocks to distillable hydrocarbon products is achieved through a combination process involving solvent deasphalting, solvent deresining and multiple-stage hydrocracking.

3,775,293

DESULFURIZATION OF ASPHALTENE-CONTAINING HYDROCARBONACEOUS BLACK OILS

Charles H. Watkins, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 9, 1972, Ser. No. 279,124
Int. Cl. C10g *13/00*
U.S. Cl. 208—86 **10 Claims**



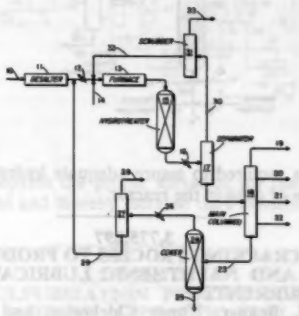
Sulfurous, asphaltene-containing black oils are converted into desulfurized, lower-boiling hydrocarbon products. The process involves a combination of solvent deasphalting, thermal cracking and multiple-stage hydrocracking.

3,775,294

PRODUCING COKE FROM HYDROTREATED CRUDE OIL

Alan H. Peterson, Littleton, and Frank L. Dormish, Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed June 28, 1971, Ser. No. 157,529
Int. Cl. C10g *37/00*
U.S. Cl. 208—89 **10 Claims**



Whole sour crude oil together with C_5-plus liquid products from a coker are hydrotreated prior to separation into various boiling-range products. The residual material from this distillation is coked to obtain low sulfur coke and liquid products of which the C_5-plus portion is recycled to commingle with the crude oil prior to hydrotreating. Optionally, the crude oil may be topped to remove fractions boiling in the range of from the initial boiling point of the crude to about 400° F., prior to hydrotreating.

3,775,295

METHOD FOR THE DECOMPOSITION OF ADDUCTS OF UREA AND n-PARAFFINS

Hermann Franz, Neu Isenburg, and Max Kunert, Neu Wulmstorf, Germany, assignors to Edeleanu Gesellschaft m.b.H., Frankfurt am Main, Germany

No Drawing. Filed July 29, 1970, Ser. No. 59,343
Claims priority, application Germany, Sept. 11, 1969, P 19 45 902
Int. Cl. C07b *21/00*; C10g *43/00*
U.S. Cl. 208—25 **7 Claims**

An adduct of urea and n-paraffin is decomposed by heating a mixture of adduct, water and solvent in a closed vessel to decomposition temperature until the adduct decomposes and maintaining the mixture at this temperature until it separates into a first layer comprising n-paraffin and solvent and a second layer comprising an aqueous solution of urea. Lower decomposition temperatures than employed heretofore are achieved and the resultant aqueous solution of urea may be employed for further adduct formation without requiring a concentration step.

3,775,296

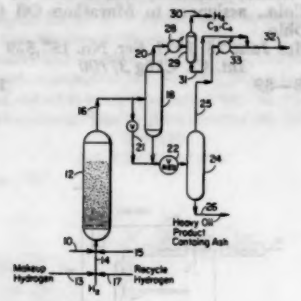
TREATING TAR SANDS

Michael C. Chervenak, Pennington, and Ronald H. Wolk, Trenton, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Mar. 20, 1972, Ser. No. 235,918
Int. Cl. C10g *13/02*
U.S. Cl. 208—108 **2 Claims**

The degree of hydrogenation of bitumen derived from tar sands obtained in an upflow liquid phase reactor in which a hydrocracking reaction is being carried out for the production of an upgraded synthetic petroleum stock

is a function of the amount of naturally occurring solids component in the tar sands. In some cases a supplemental



catalyst is required to assure adequate hydrogenation and avoidance of coke in the reactor.

3,775,297

HYDROCRACKING PROCESS TO PRODUCE GASOLINE AND NAPHTHENIC LUBRICATING OILS CONCURRENTLY

Robert I. Benner, Upper Chichester, and William P. Mortimer, Aston Township, Delaware County, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Oct. 4, 1971, Ser. No. 186,115
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **5 Claims**

Fresh gas oils are converted to high quality motor fuels and naphthenic lubricating oils by hydrocracking at 720–750° F. in the presence of crystalline zeolite hydrocracking catalyst containing a hydrogenating component, e.g., palladium, the catalyst having been preconditioned to a predetermined state of deactivation. Preconditioning is accomplished by accelerated coking with an aromatic gas oil at 800–900° F.

3,775,298

HYDROCONVERSION PROCESS FOR PRODUCTION OF LPG IN PRESENCE OF MORDENITE ALUMINOSILICATE

Herbert C. Morris, Wappingers Falls, N.Y., and Thomas A. Cooper, Port Arthur, Billy H. Cummins, Nederland, and Donald E. Sweeney, Jr., Beaumont, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 778,789, Nov. 25, 1968. This application Oct. 27, 1971, Ser. No. 193,143
Int. Cl. C07c *3/00*; C10g *13/02*
U.S. Cl. 208—111 **11 Claims**

Gaseous hydrocarbons suitable for use in liquified petroleum gas, LPG, are produced by contacting a hydrocarbon feedstock under conversion conditions in the presence of a catalyst comprising a mordenite aluminosilicate, preferably containing a Group VIII metal having an atomic weight greater than about 100. In a preferred embodiment the mordenite has an increased silica to alumina mole ratio.

3,775,299

CATALYTIC CRACKING WITH CATALYST OF ZEOLITE IN WEIGHTED MATRIX

Leonard S. Hepner, Haddonfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Original application Apr. 13, 1970, Ser. No. 27,992, now Patent No. 3,717,587. Divided and this application Nov. 18, 1971, Ser. No. 200,232
Int. Cl. C01b *33/28*; C10g *11/04*
U.S. Cl. 208—120 **10 Claims**

New catalyst for hydroconversion of organic feedstocks and method of preparing such catalyst. Catalyst comprises an inorganic oxide gel matrix having dispersed therein a crystalline aluminosilicate zeolite. Matrix is treated, prior to heat ageing, with acid to adjust the molar ratio of OH/SiO_2 to from about 0.18 to 0.21. The catalyst exhibits superior low coking tendencies.

3,775,300

HYDROCARBON CONVERSION WITH A CATALYTIC COMPOSITE OF PLATINUM IRON AND GERMANIUM

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application Mar. 2, 1970, Ser. No. 15,961, now abandoned. Divided and this application Jan. 10, 1972, Ser. No. 216,738
Int. Cl. B10j *11/08, 11/22, 11/78*; C10g *35/06*
U.S. Cl. 208—139 **12 Claims**

Hydrocarbons are converted by contacting, at conversion conditions, with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component, an iron component, and a Group IV–A metallic component with a porous carrier material. A specific example of the disclosed hydrocarbon conversion process is a process for reforming a gasoline fraction which comprises contacting the gasoline fraction and hydrogen, at reforming conditions, with a catalytic composite comprising a combination of catalytically effective amounts of a platinum component, an iron component, a germanium component and a halogen component with an alumina carrier material.

3,775,301

HYDROCARBON CONVERSION WITH A TRIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application July 3, 1969, Ser. No. 839,086, now abandoned. Divided and this application Feb. 11, 1972, Ser. No. 225,634
The portion of the term of the patent subsequent to Nov. 2, 1988 has been disclaimed
Int. Cl. C10g *21/00*
U.S. Cl. 208—139 **11 Claims**

Hydrocarbons are converted by contacting them at hydrocarbon conversion conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum component, a rhenium component and a germanium component with a porous carrier material. A specific example of the disclosed hydrocarbon conversion processes is a process for the catalytic reforming of a gasoline fraction which comprises contacting the gasoline fraction and hydrogen with a catalytic composite, comprising a combination of catalytically effective amounts of a platinum component, a rhenium component, a germanium component and a halogen component with an alumina carrier material, at reforming conditions.

3,775,302

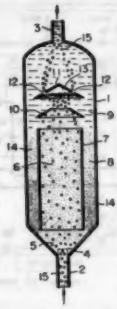
PREVENTION OF EFFLUX OF HYDRODESULFURIZATION CATALYST PARTICLES

Junichi Kubo and Yoshihisa Koiwai, Kawasaki, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,751
Claims priority, application Japan, Dec. 26, 1970, 45/118,718
Int. Cl. C10g *23/06*
U.S. Cl. 208—157 **5 Claims**

In a method for catalytic hydrodesulfurization of a heavy petroleum hydrocarbon oil in a reactor composed of a cylindrical pressure vessel and a cylindrical inner pipe, in which hydrogen gas, oil liquid and solid catalyst particles are concurrently present and the catalyst particles are fluidized and recycled in the reactor without

flowing out of the reactor, an improvement for the prevention of the catalyst's efflux is achieved by the provision of a bubble-collecting plate and a catalyst particles-catching plate above the inner pipe in the reactor.

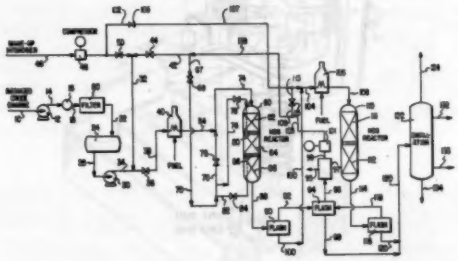


3,775,303

PRODUCTION OF LOW SULFUR ASPHALTIC FUEL OIL

Joel D. McKinney and John A. Paraskos, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 8, 1971, Ser. No. 205,791
Int. Cl. C10g 23/02
U.S. Cl. 208—210 14 Claims



Asphalt-containing oils are hydrodesulfurized to below a refractory sulfur level without excessively converting the asphalt present by employing a two-stage hydrodesulfurization process with interstage hydrogen sulfide and light oil removal, wherein the quantity of aromatics and saturates present is controlled to provide the proper solvation of asphaltenes and resins so as to permit refractory sulfur removal therefrom.

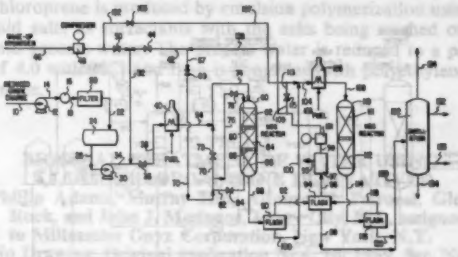
3,775,304

INCREASING THE RATIO OF AROMATICS TO SATURATES IN HYDRODESULFURIZATION OF HEAVY ASPHALTIC FEED OIL

Joel D. McKinney and John A. Paraskos, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 8, 1971, Ser. No. 206,077
Int. Cl. C10g 23/02
U.S. Cl. 208—210 7 Claims

Asphalt-containing oils are desulfurized to remove refractory, asphaltic sulfur without excessively converting the asphaltenes and resins present in a hydrodesulfurization process, wherein the ratio of aromatics to saturates is increased to provide the proper solvation for the asphaltenes and resins and thereby increase their desulfurization rate.

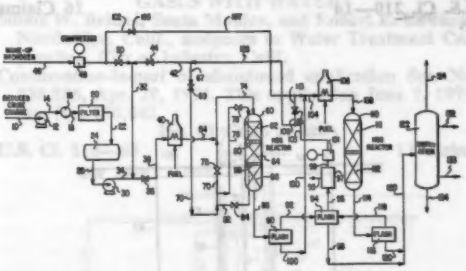


3,775,305

HYDRODESULFURIZATION PROCESS FOR PRODUCING A HEAVY ASPHALTIC FUEL OIL

Joel D. McKinney and John A. Paraskos, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 8, 1971, Ser. No. 206,083
Int. Cl. C10g 23/02
U.S. Cl. 208—210 15 Claims



Asphalt-containing oils are hydrodesulfurized to below a refractory sulfur level without excessively converting the asphalt present by employing a two-stage hydrodesulfurization system with interstage hydrogen sulfide and light oil removal, wherein the average hydrogen partial pressure in each hydrodesulfurization stage is maintained sufficiently high that the average reaction rate constant is improved by a two-stage operation, but sufficiently low so that not less than about 50 percent by weight of the feed is recovered as a product boiling above the I.B.P. of the feed.

3,775,306

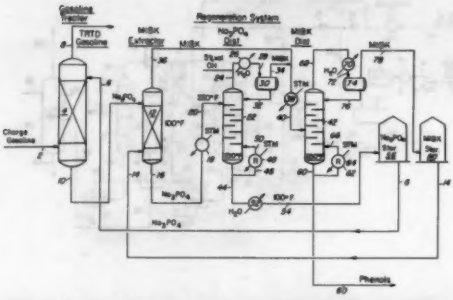
SOLVENT REMOVAL OF PHENOLS FROM CATALYTIC GASOLINE AND SOLVENT RECOVERY

Kenneth F. Hayden, Round Pond, Maine, assignor to Mobil Oil Corporation

Filed July 19, 1972, Ser. No. 273,249
Int. Cl. C10g 27/04
U.S. Cl. 208—263 10 Claims

A non-caustic regenerative process for removing phenols from gasoline is described. The process employs

an aqueous solution of tri-sodium phosphate which is regenerated by extraction to remove phenols therefrom



by contact with methyl isobutyl ketone. Methyl isobutyl ketone is regenerated by distillation to separate phenols.

3,775,307

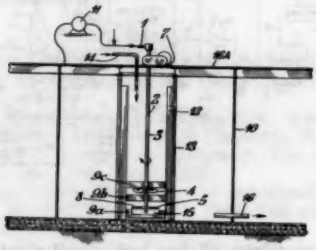
SYSTEM FOR GAS SPARGING INTO LIQUID

John R. McWhirter, Westport, Conn., and Jon G. Albertsson, Grand Island, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 32,070, Apr. 27, 1970. This application Apr. 8, 1971, Ser. No. 132,483

Int. Cl. C02c *1/12*

U.S. Cl. 210—14 **16 Claims**



A system for sparging gas into liquid as for example oxygen into waste liquid containing organic solids, wherein the gas is injected with a vertical direction component as a multiplicity of discrete streams orbited around a common vertical axis to scribe a multiplicity of circles having different radii, and through small openings to form small gas bubbles.

3,775,308

METHOD FOR PREPARATION OF COMPOSITE SEMIPERMEABLE MEMBRANE

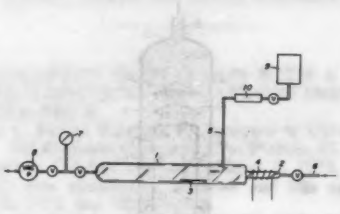
Hirotsugu Yasuda, Durham, N.C., assignor to the United States of America as represented by the Secretary of the Interior

Filed May 18, 1972, Ser. No. 254,518

Int. Cl. B01d *13/00*; B01k *1/00*

U.S. Cl. 210—23 **8 Claims**

A semipermeable composite membrane is formed by electrodeless glow discharge polymerization of an organic monomer in the presence of a porous support, the polymerization resulting in deposition of a thin film of polymer on the surface of the support.



3,775,309

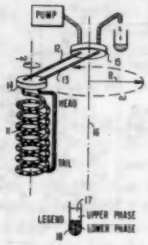
COUNTERCURRENT CHROMATOGRAPHY WITH FLOW-THROUGH COIL PLANET CENTRIFUGE

Yoichiro Ito, Chevy Chase, and Robert L. Bowman, Bethesda, Md., assignors to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

Filed July 27, 1972, Ser. No. 275,777

Int. Cl. B01d *15/08*

U.S. Cl. 210—31 C **10 Claims**



A method of countercurrent chromatography employs a vertical helical tube in a centrifugal field. The helical tube is arranged so that it does not rotate as it revolves, thus eliminating the need for rotating seals. Solutes introduced into the tube are subjected to a rapid partition process, resulting in an efficient chromatographic separation without the complications arising from solid supports.

3,775,310

CONTINUOUS ION EXCHANGE

Joseph E. Conway, Collegeville, and William A. Keilbaugh, West Chester, Pa., assignors to Crane Co., Chicago, Ill.

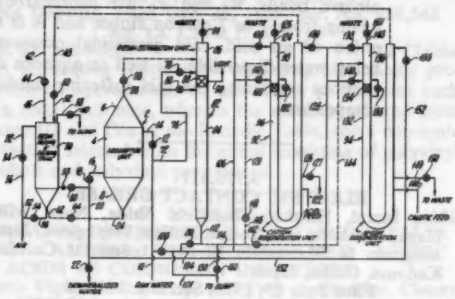
Filed Mar. 12, 1971, Ser. No. 123,695

Int. Cl. B01d *15/06*

U.S. Cl. 210—33 **20 Claims**

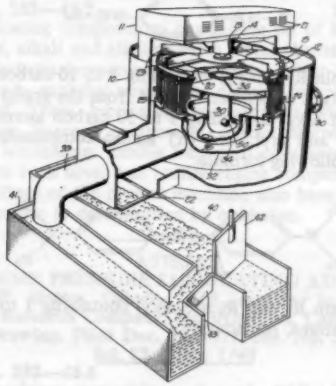
In a continuous countercurrent adsorption apparatus, mixed adsorbents leaving the adsorption unit are separated, where necessary, in a separation unit and fed to

appropriate regeneration units. Continuous flow of product is accomplished by utilizing the liquid medium in a



mixing and/or pulsing tank during the resin replacement intervals.

3,775,311
SCREENING AERATOR CONCENTRATOR
Philip H. Mook, Huntington Beach, and Theodore R. Westfall, Burbank, Calif., assignors to Sweco, Inc., Los Angeles, Calif.
Filed May 6, 1971, Ser. No. 140,929
Int. Cl. B03d *1/00*
U.S. Cl. 210—44 **12 Claims**



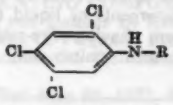
An apparatus for separating waste water into a waste containing concentrate and a relatively waste free effluent is disclosed. The apparatus comprises a fine mesh rotating screening aerator combined with a froth flotation system. New methods for concentrating waste water are also disclosed utilizing separation by a combination of a rotating aerating screen with froth flotation procedures, as well as concentrating waste water and enhancing the entry of air to the apparatus to increase the dissolved and entrained oxygen in the effluent.

3,775,312
TREATMENT OF PROCESS WATER
Philip Merchant, Jr., Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Filed Sept. 22, 1971, Ser. No. 182,866
Int. Cl. C02b *1/20*
U.S. Cl. 210—51 **18 Claims**

Separation of emulsifiers which are salts of the condensation product of naphthalene sulfonic acid and formaldehyde from process water by contacting the process water with an amine having a molecular weight of at least 60. The process water and/or the amine is reduced to a pH of 7.0 or less prior to contacting. For example, polychloroprene is produced by emulsion polymerization using said salts as surfactants with the salts being washed out into process water. The process water is reduced to a pH of 4.0 with HCl and then is contacted with polyethyleneamine.

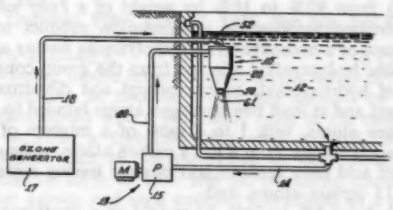
3,775,313
BIOCIDAL TREATMENT OF WATER USING 2,4,5-TRICHLOROANILINE DERIVATIVES
Phillip Adams, Murray Hill, Alfonso N. Petrocci, Glen Rock, and John J. Merianos, Jersey City, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.
No Drawing. Original application Nov. 10, 1969, Ser. No. 875,499, now abandoned. Divided and this application Mar. 19, 1971, Ser. No. 126,334
Int. Cl. C02b *3/06*
U.S. Cl. 210—62 **3 Claims**

Derivatives of 2,4,5-trichloroaniline having the general formula:



wherein R is the residue of an aliphatic, alicyclic, aromatic or arylaliphatic compound. These derivatives possess marked antimicrobial power.

3,775,314
METHOD AND APPARATUS FOR MIXING GASES WITH WATER
Stuart W. Beitzel, Santa Monica, and Robert F. Edwards, Northridge, Calif., assignors to Water Treatment Corporation, City of Industry, Calif.
Continuation-in-part of abandoned application Ser. No. 138,585, Apr. 29, 1971. This application June 7, 1971, Ser. No. 150,642
Int. Cl. C02b *1/38*
U.S. Cl. 210—63 **13 Claims**



A whirling mass of fluid in a high pressure zone is injected into a body of water to be purified, said body of water having a pressure lower than that in the high pressure zone, thereby creating in said body of water a partial vacuum zone containing water and water vapor, the temperature and pressure in said partial vacuum zone being less than about 25° C. and 10 p.s.i., respectively; introducing oxygen and/or ozone gas at a pressure of less than about 15 p.s.i. into said partial vacuum zone, thereby forming bubbles of said gas in said water and forming at the surface of said bubbles water vapor which causes the surface of said bubbles to cool to a temperature at which expanding water vapor condenses on said surface of said bubbles to form a clathrate molecule compose of a crystalline film of water with a molecule of oxygen or ozone inside, introducing said clathrate molecule into the water to be purified and melting said crystalline film thereby releasing the oxygen or ozone molecule into the body of

water. The apparatus includes a cylindrical shaped hollow housing with an opening for introducing a whirling fluid into a body of water and a gas pipe for introducing oxygen or ozone gas into the partial vacuum formed by the introduction of said whirling fluid into said body.

3,775,315

MANUFACTURE OF AMMONIUM POLYPHOSPHATE

Raymond Anthony Smith, Walsall, and Ralph Thomas Russell, Brierley Hill, England, assignors to Albright & Wilson Limited, Birmingham, England

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,676
Claims priority, application Great Britain, Feb. 23, 1971, 5,269/71
Int. Cl. C01b *25/28*; C09k *3/28*
U.S. Cl. 252—1 20 Claims

Modified ammonium polyphosphates containing a detergent (water-active agent) constituent are prepared by reacting an ammoniating agent such as urea or thiourea with a phosphoric acid reagent in the presence of from 1 to 35% by weight based on the total weight of P_2O_5 in the reaction mixture of a wetting agent. The product may be obtained in soluble form having built-in detergency for use in detergents or liquid fertilizers, or in a water-insoluble form having fire-retardant properties suitable for intumescent paints and fire extinguishing compositions.

3,775,316

SOFTENING FINISHES FOR WASHED LAUNDRY

Markus Berg, Dusseldorf-Holthausen, Walter Fries, Erkrath-Unterbach, Josef Hartenstein, Hilden, and Claus Werner, Haan, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Continuation of abandoned application Ser. No. 29,289, Apr. 16, 1970. This application Feb. 29, 1972, Ser. No. 230,446
Claims priority, application Germany, Apr. 30, 1969, P 19 22 047.4
Int. Cl. D06m *13/40*
U.S. Cl. 252—8.8 8 Claims

A softening finishing composition for washed laundry having a content of textile softeners and optionally germicidal quaternary ammonium compounds consisting essentially of:

(1) from 92% to 10% by weight of a fatty acid-hydroxyalkylpolyamine condensation product of one mol of a hydroxyalkyl-alkylpolyamine having at least one hydroxyalkyl selected from the group consisting of hydroxyethyl, hydroxypropyl and dihydroxypropyl and at least two hydrogen atoms bonded to nitrogen atoms, with 1 to 4 mols of a mixture of fatty acids having from 8 to 24 carbon atoms, at least half of said fatty acids in said mixture having more than 15 carbon atoms, and

(2) from 8% to 90% by weight of a quaternary ammonium compound mixture of

(a) from 0 to 100% by weight of said mixture of textile softeners of the formula

wherein R_1 and R_2 are alkyl having 14 to 26 carbon atoms, R_3 and R_4 are alkyl having from 1 to 4 carbon atoms and A is the anion of an acid, said softener being water-dispersible, and

(b) from 100% to 0 by weight of said mixture of a germicidal quaternary ammonium compound of the formula

wherein R_5 is an aliphatic hydrocarbonyl having 8 to 18 carbon atoms, R_6 is a member selected from the group consisting of arylaliphatic hydrocarbonyl and aliphatic hydrocarbonyl having olefinic bonds, R_7 and R_8 are hydrocarbonyl having from 1 to 7 carbon atoms, and A is the anion of an acid, said germicidal compound being water-dispersible, as well as aqueous dispersions containing the said softening finishing composition.

3,775,317

ELECTRIC CONTACT GREASE

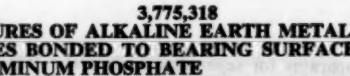
Akira Inami, Hirakata, Sankichi Shida, Nara, Mikio Haga, Hirakata, and Kotaro Kariya, Neyagawa, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Filed June 19, 1972, Ser. No. 264,062
Claims priority, application Japan, Aug. 17, 1971, 46/62,793
Int. Cl. C10m *5/20*, *5/26*
U.S. Cl. 252—11 4 Claims

An electric contact grease consisting essentially of:

(a) a major amount of paraffinic mineral oil,
(b) 2 to 15 percent by weight of chlorinated diphenyls and triphenyls,
(c) 7 to 12 percent by weight of colloidal silica, and
(d) 0.1 to 3.0 percent by weight of at least one member selected from the group consisting of (i) amino compounds having the following formula:

wherein R_1 is alkyl containing 3 to 10 carbon atoms, and R_2 is a member selected from the group consisting of alkyl containing 3 to 10 carbon atoms, cycloalkyl and aryl, and (ii) amino compounds having the following formula:



wherein R_1 and R_2 are alkyl containing 1 to 10 carbon atoms, respectively.

3,775,318

MIXTURES OF ALKALINE EARTH METAL FLUORIDES BONDED TO BEARING SURFACE WITH ALUMINUM PHOSPHATE

Melvin T. Lavik, Kansas City, George D. Moore, Raytown, and Ronald D. Hubbell, Kansas City, Mo., assignors to Midwest Research Institute, Kansas City, Mo.

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,242
Int. Cl. C10m *7/02*
U.S. Cl. 252—12 16 Claims

A high temperature lubricant composition comprises an admixture of a monoaluminum phosphate binder and two or more particulate alkaline earth metal fluoride lubricant pigments dispersed in the binder and present preferably in approximately a eutectic ratio. To form a lubricating film on a bearing surface, the composition is prepared by mixing the pigments in an aqueous solution of the binder and is then applied as a coating to the surface. After precuring at a relatively low temperature to eliminate moisture, a final cure is effected by heating the coating in an evacuated environment to a temperature approaching the melting point thereof in order to diffuse the coating and form a film that is tightly adhered to the surface.

3,775,319
OIL COMPOSITION WITH ANTI-CORROSION PROPERTIES
David A. Hartman, Trenton, N.J., assignor to Cities Service Oil Company
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,345
Int. Cl. C10m *1/32, 1/40*
U.S. Cl. 252—33.4 12 Claims

A lubricating composition consisting of a major proportion of hydrocarbon oil and minor proportions each of a metal sulfonate, wherein the metal is selected from Group II*b* and IV*a* of the Periodic Table, and a non-ionic surfactant selected from the group consisting of polyvinyl alcohols and polyvinyl pyrrolidone.

3,775,320
ORGANIC COMPOSITIONS CONTAINING SALTS OF AMINES AND SUBSTITUTED ACETIC ACIDS AS CORROSION INHIBITORS
Mario Vigo, Portici, Italy, and Fritz A. Buehler, Cherry Hill, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed Oct. 5, 1971, Ser. No. 186,818
Int. Cl. C10m *1/48*
U.S. Cl. 252—33.6 7 Claims

Organic compositions are provided containing, as a corrosion inhibitor, salts obtained by reacting an imidazoline or a diamine with an alpha-substituted acetic acid.

3,775,321
LUBRICATING OIL COMPOSITION
Byron W. Turnquest, Chicago, Tai S. Chao, Homewood, and Victor E. Broman, Palos Park, Ill., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed July 9, 1971, Ser. No. 161,947
Int. Cl. C10l *1/38;* C10n *1/54*
U.S. Cl. 252—42.7 21 Claims

Lubricating compositions comprising oil of lubricating viscosity, alkali and alkaline earth metal phenates, chlorinated hydrocarbonaceous components, sulfur-containing compounds, naphthyl amines and diamine components are disclosed. These lubricating compositions when maintained on internal combustion engine components requiring lubrication, exhibit improved resistance to wear caused to both silver and bronze engine components. The compositions of the present invention also have outstanding resistance to deterioration by oxidation.

3,775,322
EXTREME PRESSURE LUBRICATING ADDITIVE
Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Dec. 20, 1971, Ser. No. 210,242
Int. Cl. C10m *1/48*
U.S. Cl. 252—46.6 4 Claims

Compositions comprising a class of sulfidized-phosphosulfidized esters impart extreme pressure and anti-wear properties to lubricating oils.

3,775,323
COMPOSITIONS WITH A SIMULTANEOUS LUBRICATING AND PHOSPHATISING ACTION FOR THE SURFACE TREATMENT OF STEELS FOR THE PURPOSE OF COLD FORMING OPERATIONS, AND PREPARATION AND USE OF SUCH COMPOSITIONS
Jean Dubourg, Sotteville-les-Rouen, France, assignor to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Jan. 20, 1972, Ser. No. 219,528
Int. Cl. C10m *1/32, 1/44*
U.S. Cl. 252—49.5 12 Claims

A lubricating and phosphatising composition, of pH less than 2 and which is liquid at temperatures below 80° C., contains by weight (a) 30–70% of a phosphate of an amide derived from a C_{14}–C_{24} unsaturated fatty acid and an amine $H(NHCH_2CH_2)_nNH_2$ where n=2–6, (b) 15–55% of a hydrocarbon, non-drying glyceride or ester of a C_{14}–C_{18} fatty acid and an alkanol of less than 10 carbons, (c) 3–10% water, (d) 2–7% free phosphoric acid, (e) 8–15% hexylene glycol or a phosphate of methylformamide, dimethylformamide or dimethylacetamide and optionally (f) up to 5% of a surfactant. The composition is prepared by first forming component (a), mixing it with components (b), (e) and (f) and finally incorporating components (c) and (d).

3,775,324
LUBRICATING OIL COMPOSITION
Frederic C. McCoy, Beacon, Arthur W. Godfrey, Fishkill, and Robert E. Reid, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.
Filed June 16, 1971, Ser. No. 153,534
Int. Cl. C10m *1/28*
U.S. Cl. 252—54.6 8 Claims

Lubricant composition having improved anti-foaming properties comprising a mineral lubricating oil and containing an anti-foam amount of perfluoroalkylpolyether.

3,775,325
PREPARATION OF SYNTHETIC HYDROCARBON LUBRICATING COMPOSITIONS
Oliver C. Kerfoot and Delmar D. Krehbiel, Ponca City, Okla., and George C. Feighner, Franklin Lakes, N.J., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed May 30, 1972, Ser. No. 258,137
Int. Cl. C10m *1/16*
U.S. Cl. 252—59 12 Claims

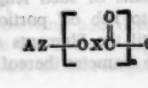
Synthetic hydrocarbon lubricating compositions, such as those disclosed in U.S. Pat. 3,598,739, having improved pour point properties may be prepared in situ by Friedel-Crafts alkylation of a mixture of monoalkyl-substituted aromatic compounds containing at least 2 volume percent of tetrahydronaphthalene compounds with a halogenation product derived from partially chlorinating or brominating paraffins.

3,775,326
PRESSURE FIXABLE ELECTROSCOPIC PRINTING POWDER
Virgil W. Westdale, Arlington Heights, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
No Drawing. Filed Apr. 17, 1972, Ser. No. 244,925
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 5 Claims

A pressure fixable toner for electrostatic image development, that can be fixed on a receiving member by pressure, formulated with a polyamide resin in the range of 25% to 35%, a frangible resin 40% to 50%, and a polyolefene such as polymethylene or polyethylene in the range of 2.0% to 15% and the remainder consisting of color agents, and such optional ingredients as a metal soap or a polyhydric alcohol, the critical components being the polyamide resin and the polyolefin resin.

3,775,327
DISPERSIONS CONTAINING POLYESTERS WITH TERMINAL POLYHYDROXYL GROUPS
Darrell R. Thompson, Somerville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 776,774, Nov. 18, 1968. This application Apr. 12, 1971, Ser. No. 133,422
Int. Cl. C08g *51/28;* H01f *1/28*
U.S. Cl. 252—62.54 12 Claims

Dispersions of particles in organic liquids, containing, as anti-flocculating agents, polyesters represented by the general structure



3,775,328

COMPOSITE SOFT MAGNETIC MATERIALS

Peter A. Denes, 9101 Crestwood Ave. NE., Albuquerque, N. Mex.

No Drawing. Continuation-in-part of application Ser. No. 538,985, Mar. 31, 1966. This application Mar. 23, 1970, Ser. No. 22,041

Int. Cl. C04b *35/26*

U.S. Cl. 252—62.55 19 Claims

A composite soft magnetic material containing at least two distinguishable magnetic materials in particulate form; specifically, ferromagnetic particles and ferrimagnetic particles coated with a layer of ferromagnetic material.

3,775,329

LUBRICANT COMPOSITIONS CONTAINING A VISCOSITY INDEX IMPROVER

Rudolf J. A. Eckert, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,846

Claims priority, application Great Britain, Nov. 13, 1970, 54,176/70

Int. Cl. C10m *1/16*

U.S. Cl. 252—59 6 Claims

The viscosity index of lubricating oils is substantially increased by the presence of a minor amount of a hydrogenated tapered copolymer of isoprene and a monovinyl aromatic compound.

3,775,330

PROCESS AND AGENTS FOR THE CLEAR-RINSE IN MECHANICAL DISHWASHING

Heimold Batka, Dusseldorf-Reishold, and Theodor Altenschöpfer, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

No Drawing. Filed Dec. 7, 1971, Ser. No. 205,719

Claims priority, application Germany, Dec. 18, 1970, P 20 62 463.9

Int. Cl. C11d *1/66*

U.S. Cl. 252—89 5 Claims

Process for rinsing of dishes in dishwashing machines having one or several clear-rising cycles using an aqueous solution of an adduct of from 5 to 20 mols of ethylene oxide and from 1 to 10 mols of propylene oxide to alkanediols with a linear alkane chain of from 10 to 20 carbon atoms and having vicinal, non-terminal hydroxyls, as well as clear-rinsing agent compositions for use in the process.

3,775,331

MANUFACTURE OF ENZYME SPHERES

Giuseppe Borrello, Anzio, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,234

Claims priority, application Italy, Dec. 22, 1970, 55,581/70

Int. Cl. C11d *7/42*

U.S. Cl. 252—89 10 Claims

A process for the manufacture of enzymatic compositions in spherical form, having increased stability upon storage and on exposure to oxidizing agents, which comprises mixing a normally solid enzyme with a normally solid synthetic organic surface active agent at a temperature at which the enzyme is stable and for a period long enough to form a homogeneous mixture thereof, compressing the mixture under pressure and mechanically working it to make it plastic, forcing the worked mixture through small openings to produce filaments thereof having a diameter approximately that of the desired spheres, rolling a bed of filaments of such lengths in frictional contact with surfaces to rub off portions thereof, continuing said rolling until the filaments are reduced to a length about that of the diameter thereof and are rounded into spherical shape, and removing such rounded particles from an upper portion of the bed; and the enzymatic compositions produced thereby.

3,775,332

METHOD OF ACTIVATING PER-COMPOUNDS AND SOLID ACTIVATED PER-COMPOUND COMPOSITIONS

Arnold Heins, Hilden, Dieter Kühling, Monheim, and Helmut Bloching, Hilden, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

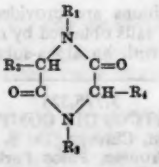
No Drawing. Filed Aug. 2, 1971, Ser. No. 168,374

Claims priority, application Germany, July 31, 1970, P 20 38 106.0; Oct. 21, 1970, P 20 51 554.2

Int. Cl. C11d *7/54*

U.S. Cl. 252—95 22 Claims

The method of activating aqueous solutions of per-compounds utilizing an activator diacylated 2,5-diketopiperazine and sol'd activated compositions of solid per-compounds and an activator diacylated 2,5-piperazine, said activator diacylated 2,5-diketopiperazine having the formula



wherein R_1 and R_2 are acyls of organic carboxylic acids having from 2 to 9 carbon atoms and R_3 and R_4 are members selected from the group consisting of hydrogen, alkyl having from 1 to 3 carbon atoms, hydroxyalkyl having 1 to 3 carbon atoms, haloalkyl having 1 to 3 carbon atoms, nitroalkyl having 1 to 3 carbon atoms, nitriloalkyl having 2 to 4 carbon atoms and alkoxyalkyl having 2 to 5 carbon atoms.

3,775,333

N-ACYL AZOLINONES AS PEROXYGEN BLEACH ACTIVATORS

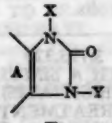
Frank Fred Loffelman, Somerville, and Robert Edward Misner, Piscataway, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 30, 1972, Ser. No. 267,839

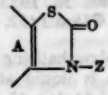
Int. Cl. C11d *7/54*

U.S. Cl. 252—99 10 Claims

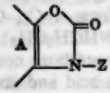
N-acyl azolinone compounds having a formula selected from

(I) 

(II)

(III) 

and

(IV) 

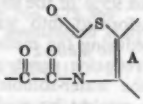
wherein:

A represents a completed benzene or naphthalene ring system which may carry a substituent selected from alkyl, alkoxy, halo, nitro, cyano and acetamido;

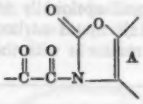
X represents hydrogen, acetyl, propionyl, benzoyl, cinnamoyl, phenylsulfonyl or 2-furoyl;

Y represents acetyl, propionyl, benzoyl, cinnamoyl, phenylsulfonyl or 2-furoyl;

Z may be the same as Y or a radical selected from



and



radicals; and

R_1 and R_2 individually represent hydrogen, alkyl or phenyl; are effective as bleach activators in bleaching compositions comprising hydrogen peroxide or a hydrogen peroxide-releasing compound. The activated bleaching compositions are useful for various bleach applications, including fabrics, particularly when incorporated in detergent laundering compositions in which they show good storage stability and high effectiveness at low (50–70° C.) temperature.

3,775,334

DEODORIZING AND CLEANING GARBAGE DISPOSALS

Sharon K. Christie, Long Island City, N.Y., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,548

Int. Cl. B29c *13/00;* **C11d** *7/50*

U.S. Cl. 252—171 **11 Claims**

Deodorizing and cleaning garbage disposal by supplying thereto a capsule comprising citrus oil, surfactant and water miscible solvent encapsulated in said capsule.

3,775,335

DIBASIC ACID ANHYDRIDES

Philip G. Irwin, Penn Hills Township, Allegheny County, Thomas J. McNaughtan, Brentwood, and Anargiros Pete Patellis, Rostraver Township, Westmoreland County, Pa., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed July 21, 1971, Ser. No. 164,918

Int. Cl. C08f *45/72*

U.S. Cl. 252—182 **4 Claims**

A substantially solvent-free composition being liquid at ambient temperatures comprising: 3 methyl-Δ4-tetrahydrophthalic anhydride; 4-methyl - Δ4 - tetrahydrophthalic anhydride; and, optionally, polymeric anhydride. The composition is characterized by a low melting point, preferably in the range of —40 to 7° C., and is prepared by reacting equal molar amounts of (i) a mixture of diolefins consisting essentially of isoprene and piperylene present in a diene molar ratio ranging from 60:40 respectively to 5:95 respectively, said diene molar ratio being based on the diene content of said mixture; and (ii) maleic anhydride.

3,775,336

HIGH INTENSITY CHEMILUMINESCENT SYSTEM WITH WEAKLY BASIC SALT-TYPE CATALYST

Laszlo Joseph Bollyky, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of abandoned application Ser. No. 813,864, Apr. 7, 1969. This application Sept. 7, 1971, Ser. No. 178,496

Int. Cl. C09k *3/00*

U.S. Cl. 252—188.3 CL **8 Claims**

This invention relates to a chemiluminescent lighting system of relatively short life and high intensity using basic salts as the catalyst.

3,775,337

FORMATION OF TUBULAR ARTICLES

Christopher Cameron Hope Wheatley, Wantage, and Dennis George, Didcot, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed July 13, 1970, Ser. No. 54,654

Claims priority, application Great Britain, July 16, 1969, 35,868/69

Int. Cl. G21c *3/02*

U.S. Cl. 252—301.1 R **3 Claims**

Cladding for nuclear fuel is provided by laying upon a mandrel a sufficient number of layers of a flexible film of cladding material, curing the film to make it self-supporting and then replacing the mandrel with a nuclear fuel artefact to be clad and sintering the cladding so that it shrinks firmly onto the nuclear fuel artefact. The technique may be adapted to use the nuclear fuel artefact as the mandrel.

3,775,338

PROCESS FOR PREPARING A STABLE, HOMOGENEOUS URANIUM DIOXIDE-ZIRCONIUM DIOXIDE BINARY SOL

Benedict L. Vondra, Jr., Greensburg, Thomas E. Haley, Lower Burrell, and Daniel F. Burke, Delmont, Pa., assignors to Atlantic Richfield Company, Glenolden, Pa.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,437

Int. Cl. G21c *19/42*

U.S. Cl. 252—301.1 S **10 Claims**

Aqueous solutions of uranium and zirconium in their nitrate form are mixed and thereafter denitrated by contacting with an amine to form a stable, homogeneous uranium dioxide-zirconium dioxide binary sol. In one embodiment, aqueous solutions of uranium (VI) nitrate and zirconyl nitrate are mixed and the resultant solution is reduced and thereafter denitrated to form a binary sol. In another embodiment the uranium (VI) nitrate solution is first reduced and then mixed with the zirconyl nitrate solution and thereafter denitrated to form the binary sol.

3,775,339

VESSEL FOR RECEIVING AND DEFOAMING BLOOD

Vyacheslav Sergeevich Kasulin, Schelkovskoe shosse 92, korpus 7, kv. 54; Boris Sergeevich Bobrov, Prostornaya ulitsa, korpus 153b, kv. 44; Naum Arnovich Super-Fainshtein; Evgeny Evgenievich Balabin, Kolomensky proezd 1, korpus 10, kv. 112; Anatoly Maximovich Egorov, Davydkovskaya ulitsa 16, kv. 26; and Leonid Viktorovich Makarov, ulitsa Baumanna 43/1, kv. 5, all of Moscow, U.S.S.R.

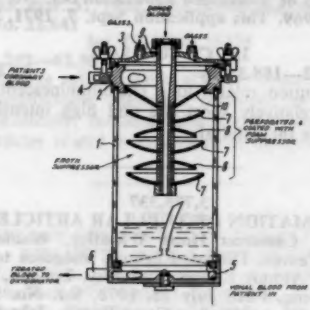
Continuation of abandoned application Ser. No. 72,726, Sept. 15, 1970. This application June 8, 1972, Ser. No. 261,127

Int. Cl. B01d *1/22, 19/00, 19/02*

U.S. Cl. 252—361 **3 Claims**

A vessel for receiving and defoaming blood, wherein provision is made for a froth suppressor device located beneath the coronary blood receptacle.

Said receptacle is separated from said froth suppressor device by a distribution funnel which directs the flow of coronary blood onto the froth suppressor device. The



froth suppressor device comprises a hollow vertical stem for admission of donor blood and perforated disks vertically spaced on the stem, each of which is coated with a foam-breaking compound.

3,775,340

RUST PREVENTIVE CONCRETE FORM RELEASE OIL

Howard M. Rue, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

No Drawing. Filed July 3, 1972, Ser. No. 268,430
Int. Cl. C23f *11/16*
U.S. Cl. 252—389 A **6 Claims**

An oil composition useful as a rust preventive on steel concrete forms comprising 84–92 volume percent naphthenic base mineral oil having a viscosity of 40–100 S.U.S. at 100° F., 4–8 volume percent dimerized linoleic acid and 4–8 volume percent lecithin. These compositions showed no corrosion on test plates in a high humidity cabinet at 140° F. after 9 days.

3,775,341

LIQUID DIALKYL PEROXYDICARBONATE COMPOSITION

James A. Barter, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 2, 1971, Ser. No. 168,006
Int. Cl. C08f *1/60*
U.S. Cl. 252—426 **12 Claims**

Compositions of liquid dialkyl peroxydicarbonate, e.g., di-n-propyl peroxycarbonate, and alkylated cyclohexane diluent, e.g., methylcyclohexane, are described. The compositions remain miscible at low temperatures, e.g., −35° C., are suitable for use as polymerization initiators for the production of polymers used in food wrapping, and are substantially less hazardous than the neat (100%) dialkyl peroxydicarbonate.

3,775,342

PROCESS FOR THE PRODUCTION OF CATALYSTS FOR MAKING VINYL ESTERS

Walter Kronig and Gerhard Scharfe, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Jan. 29, 1969, Ser. No. 795,027, now abandoned. Divided and this application Dec. 29, 1971, Ser. No. 213,741
Claims priority, application Germany, Feb. 1, 1968, P 16 68 088.9; Sept. 28, 1968, P 17 93 519.2
Int. Cl. C07c *67/04*
U.S. Cl. 252—430 **40 Claims**

Highly active catalysts for the preparation of catalysts suitable for vinyl ester, e.g., vinyl acetate, production are prepared by treating a catalyst support, simultaneously or in either sequence, with or without intermediate drying, with: (A) a solution of noble metals containing at least salts of palladium and gold, and (B) a solution containing compounds, e.g., bases such as sodium hydroxide, which are able to react with the noble metal salts of the solution (A) to form water insoluble noble metal compounds; impregnating the catalyst support with such quantities of solutions (A) and (B) corresponding to from 10 to 110% of the absorptive capacity of the catalyst support for these solutions; subjecting the impregnated catalyst support to a time temperature treatment such that at least 95% of the impregnated palladium and gold are transformed into water insoluble noble metal compounds; reducing the metal compounds to the noble metal with a reducing agent, e.g., ethylene or hydrazine; removing the water-soluble compounds which are contained in the catalyst by washing before or after the reduction step; and optionally treating the resulting catalyst with an alkali metal carboxylate, e.g., acetate, before or after the treatment with the reducing agent.

3,775,343

METAL-TELLURIUM-OXYGEN GLASS COMPOSITIONS AND METHOD OF MAKING

John A. Ondrey, Tyler, Tex., and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of applications Ser. No. 733,312, May 31, 1968, Ser. No. 829,701 and Ser. No. 829,721, both June 2, 1969, and Ser. No. 850,628, Aug. 15, 1969. This application Dec. 20, 1971, Ser. No. 210,145
Int. Cl. B01j *11/32*; C07c *57/04*
U.S. Cl. 252—439 **2 Claims**

Amorphous glass-like compositions of molybdenum, vanadium, tungsten or lead with tellurium and oxygen are made by heating the metal ditelluride with molecular oxygen at an elevated temperature. These resulting compositions are promoters for cobalt molybdate in the catalytic oxidation of propylene and isobutylene.

3,775,344

ACTIVE CARBON HAVING A HOLLOW MICROSPHERICAL STRUCTURE

Yasuo Amagi and Ryoichi Takahashi, Tokyo, and Masakatsu Wagu, Sendai, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 16, 1971, Ser. No. 181,038
Claims priority, application Japan, Nov. 14, 1970, 45/10,057
Int. Cl. C01b *31/08*
U.S. Cl. 252—444 **2 Claims**

Active carbon having a hollow microspherical structure is provided by subjecting carbon having a hollow microspherical structure to activation conducted at 400–1000° C. in an atmosphere of air, steam or carbon dioxide.

3,775,345

AMORPHOUS INORGANIC GEL

David E. W. Vaughan, Ellicott City, Philip K. Maher, Baltimore, and Edwin W. Albers, Annapolis, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,195
Int. Cl. B01j *11/40*; C01b *33/20*
U.S. Cl. 252—453 **15 Claims**

An amorphous high surface area inorganic gel, designated VK3, having the formula:

$$0.9 \text{ to } 1.3\ K_2O{:}3 \text{ to } 8\ SiO_2{:}Al_2O_3{:}XH_2O$$

wherein X has a value of 0 to 20.

VK3 possesses a large proportion of its surface area in pores having diameters in the 14 to 50 A. range and

finds utility as a hydrocarbon conversion catalyst and as an adsorbent for large organic molecules.

3,775,346

METHOD OF PREPARING SUPPORTED OXIDATION CATALYSTS FOR PRODUCING ETHYLENE OXIDE

Benedetto Calcagno and Natale Ferlazzo, Milan, and Marcello Ghirga, Bresso, Italy, assignors to Società Italiana Resine S.I.R. S.p.A., Milan, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 877,492, Nov. 17, 1969. This application Aug. 26, 1971, Ser. No. 175,369

Claims priority, application Italy, Nov. 23, 1968, 24,088/68

Int. Cl. B01j *11/00, 11/06*

U.S. Cl. 252—463 **6 Claims**

Ethylene oxidation catalysts are prepared by impregnating a support with a high-boiling inert organic liquid such as decane or ethylene glycol, further impregnating the support with a solution of silver lactate in lactic acid, drying and heating.

3,775,347

COMPOSITIONS FOR MAKING RESISTORS COMPRISING LEAD-CONTAINING POLYNARY OXIDE

Robert Joseph Bouchard, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 77,309, Oct. 1, 1970, now Patent No. 3,681,262, which is a continuation-in-part of application Ser. No. 880,327, Nov. 26, 1969, now Patent No. 3,583,931, which in turn is a continuation-in-part of abandoned application Ser. No. 692,108, Dec. 20, 1967. This application Mar. 16, 1972, Ser. No. 235,307

Int. Cl. H01b *1/06*

U.S. Cl. 252—518 **17 Claims**

Powder compositions which yield resistors having excellent temperature coefficient of resistance characteristics (at middle and high resistivity) comprising, by weight, (1) 20–80% polynary oxide(s) of the formula

$$(M_xPb_{2-x})(M'_2)O_{7-z}$$

wherein M is at least one metal selected from the group consisting of yttrium, indium, cadmium, bismuth and the rare earth metals of atomic number 57–71, inclusive; and M′ is at least one of ruthenium and iridium, and (2) 20–80% of dielectric material which is a lead silicate or modified lead silicate glass frit.

3,775,348

WASHING AND CLEANSING COMPOSITIONS

Gunter Jakobi, Hilden, Rhineland, and Peter Berth, Leichlingen, Germany, assignors to Henkel & Cie, GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Dec. 8, 1970, Ser. No. 96,268

Claims priority, application Germany, Dec. 20, 1969, P 19 64 023.4

Int. Cl. C11d *7/36, 7/50*

U.S. Cl. 252—524 **6 Claims**

Builder salt-containing washing and cleansing compositions comprising (a) one part by weight of a capillary-active compound selected from the group consisting of anionic surface-active compounds, non-ionic surface-active compounds and amphoteric surface-active compounds and (b) 0.5 to 20 parts by weight of a mixture of builder salts consisting of (1) from 25% to 75% by weight of said mixture of pentasodium triphosphate, (2) from 10% to 50% by weight of said mixture of sodium citrate, and (3) from 10% to 60% by weight of said mixture of sodium carbonate.

3,775,349

DETERGENT FORMULATIONS CONTAINING ALKYL POLYETHOXY SULFATE MIXTURES

Melvin E. Tuvell, Charlie F. Yancey, and Richard D. Gorsich, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed June 29, 1970, Ser. No. 50,796

Int. Cl. C11d *1/14, 1/83, 3/30, 3/32*

U.S. Cl. 252—547 **21 Claims**

It is disclosed that certain mixtures of alkyl sulfate and alkyl alkoxy sulfate detergents have superior properties when used in hard water where the alkyl groups of the sulfates range from about 10 to about 20 carbon atoms and wherein from about 10 to about 50 percent of the alkyl groups are decyl. It is disclosed that such sulfates are useful per se and in formulations with other adjuvants with or without other detergent active materials such as tertiary amine oxides, alkyl benzene sulfonates, linear alkyl benzene sulfonates, fatty acid ethanol amides, and fatty acid diethanol amides.

3,775,350

FLAME RETARDANT INTEGRAL SKIN POLYURETHANE FOAM

Benjamin P. Juhas, Canal Fulton, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

No Drawing. Filed July 10, 1972, Ser. No. 270,128

Int. Cl. C08g *22/46*

U.S. Cl. 260—2.5 AZ **7 Claims**

A very minor amount of finely divided carbon black added to a polyurethane integral skin foam formulation will improve the flame retardency of the resulting foams. These flexible and semiflexible foam structures, also, have good tensile strength, tear strength, loading and elongation properties. Surface coatings or finishes applied to the surface of the integral skin of the foam do not discolor on exposure to ultraviolet light.

3,775,351

PRODUCTION OF POLYMER-INORGANIC FOAM

Carrol C. Sachs, 9938 Clybourn Ave., Sunland, Calif. 91352

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,943

Int. Cl. C08d *13/08;* **C08f** *47/08*

U.S. Cl. 260—2.5 L **21 Claims**

Production of polymer-inorganic hybrid foam construction materials, by a process which comprises whipping air into a resin emulsion, such as a polyvinyl acetate emulsion, establishing a pre-foam or resin emulsion bubbles, adding an inorganic phase, which can be for example portland cement or gypsum, or a combination thereof, in the form of particles so as to suspend such inorganic particles on the foam bubbles without precipitating out such particles, pouring the resulting polymer-inorganic hybrid foam into suitable molds, permitting such foam to set to a solid self-supporting mass, usually taking place in a short period of the order of about 10 to about 30 minutes, and hardening the inorganic phase to fully set the hybrid foam, and form a hard rigid polymer-inorganic hybrid foam which is load supporting, for resistant, thermally insulating, and of low density. Such hybrid foam which is strong and lightweight, is particularly useful for production of wall, floor or roof panels in construction of buildings and homes.

3,775,352

METAL-POLYMER MATRICES AND THEIR PREPARATION

William J. Leonard, Jr., San Francisco, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,982

Int. Cl. C08f *29/34, 45/02, 47/08*

U.S. Cl. 260—2.5 B **7 Claims**

High surface area organic matrix polymers containing metals or metal oxides are produced by thermally decomposing porous Group III*b*–V*a* metal ion chain-bridged polymeric carboxylates at temperatures of from about

100° C. to 450° C. The metal-metal oxide organic matrix polymers thus produced have surface areas and pore volumes similar to those of the starting ion-linked porous polymeric carboxylates and are characterized by metal or metal oxide present as extremely fine (less than 2000 A.) particles. The products are useful in applications where fine particles of metal are desired, especially as catalysts.

3,775,353

BLUSHED POLYSTYRENE PIGMENT

Harry F. Kohne, Jr., Glenwood, and Frederick L. Kurrle, Laurel, Md., assignors to Westvaco Corporation, New York, N.Y.

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,199
Int. Cl. C08j *1/26*
U.S. Cl. 260—2.5 B **7 Claims**

A novel process is disclosed for converting a polystyrene or polystyrene-acrylonitrile latex emulsion into a novel product comprising a white, opaque pigment for use as a paper filler, a paper coating pigment, a paint pigment, or for any other application where optimum optical effects are desired. The process comprises the high shear mixing of a polystyrene-containing aqueous emulsion with a swelling agent which penetrates the polymer or copolymer particle thereby causing it to swell, and then a final step for setting the particle in its swollen state. When using a partially water miscible swelling agent, the emulsion may be washed and filtered to remove the swelling agent from the particle thereby setting it in the swollen state, but for an essentially non-water miscible swelling agent, the emulsion need only be filtered and dried to set the swollen particles, and, where removal of the swelling agent is not necessary, the treated emulsion may be used without the filtering or drying steps.

3,775,354

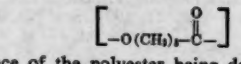
POLYURETHANE ELASTOMERS BASED ON POLY (ε-CAPROLACTONE)POLYOLS

Fritz Hostettler, Verona, and William H. Cook, Upper Montclair, N.J., and Frank G. Lombardi, Manchester, Conn., assignors to Inter-Polymer Corporation, Passaic, N.J.

No Drawing. Application Sept. 17, 1968, Ser. No. 760,362, which is a continuation-in-part of application Ser. No. 715,139, Mar. 22, 1968, now abandoned. Divided and this application Feb. 29, 1972, Ser. No. 230,517
Int. Cl. C08g *22/06, 22/08, 22/46*
U.S. Cl. 260—2.5 AN **8 Claims**

Solid and microcellular polyurethane elastomers prepared by reacting (a) liquid polyesters containing from about 25 percent by weight to about 70 percent by weight of the epsilon-oxycaproyl unit, the balance of the polyester being derived from the reaction of at least one dicarboxylic acid with at least two glycols selected from the group consisting of ethylene glycol, 1,3-propanediol, 1,4-butanediol and 1,5-pentanediol, (b) an organic polyisocyanate, and optionally (c) a chain-extender comprising water, glycols, amino alcohols, or diamines. If the liquid polyester (a) is branched, for example, by addition of small quantities of a triol, the reaction with the organic polyisocyanate may be conducted in the absence of a chain-extender. Processes for producing these elastomers are also disclosed.

Novel liquid, substantially primary hydroxyl-terminated, linear and branched polyesters containing from about 25 percent by weight to as much as about 70 percent by weight of the epsilon-oxycaproyl unit



the balance of the polyester being derived from the reaction of at least one dicarboxylic acid with at least two straight chain glycols selected from the group consisting of ethylene glycol, 1,3-propanediol, 1,4-butanediol and 1,5-pentanediol. These polyesters have a true melting point no higher than about 30° C. Also provided are processes for producing these polyesters.

3,775,355

FLAME RESISTANT EPOXY-BASED MATERIALS AND A PROCESS FOR THEIR PREPARATION

Karl Jellinek, Letmathe, Udo Post, Wissmar Uber Giessen, Dieter Gerlach, Dinslaken, Niederrhein, and Rudi Oellig, Duisburg-Meiderich, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Feb. 10, 1972, Ser. No. 225,303
Claims priority, application Germany, Feb. 12, 1971, P 21 06 788.9
Int. Cl. C08f *45/58;* C08g *51/04*
U.S. Cl. 260—37 EP **12 Claims**

A process for the preparation of a flame resistant composition which comprises mixing an epoxy resin and an epoxy resin curing agent with at least one glycidyl ether of a dibrominated mononuclear monophenol, and reacting the resulting mixture at ambient temperature to form the composition, the amount of said ether being sufficient to render said composition flame resistant. The flame resistant compositions are particularly useful as plastics, coatings and adhesives.

3,775,356

COATING COMPOSITION OF A COPOLYMER OF METHYL METHACRYLATE WITH THE POLYMERIZABLE ADDITION REACTION PRODUCT OF AN α,β-ETHYLENICALLY UNSATURATED ACID AND AN EPOXY COMPOUND WITH A CELLULOSIC ESTER OR ETHER

Nobuyoshi Nagata, Nara, and Ryuzo Mizuguchi, Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

No Drawing. Application Dec. 18, 1969, Ser. No. 886,419, now Patent No. 3,697,619, dated Oct. 10, 1972, which is a continuation-in-part of abandoned application Ser. No. 653,321, July 14, 1967. Divided and this application Sept. 3, 1971, Ser. No. 177,849,
Int. Cl. C09d *3/80;* C08g *45/14*
U.S. Cl. 260—17 R **13 Claims**

A liquid coating composition consisting essentially of (A) an organic solvent soluble copolymer formed by copolymerizing without gelation, 50–95 parts by weight of a methyl methacrylate lacquer-giving monomer component and 5–50 parts by weight of a polymerizable addition reaction product obtained by the addition reaction of an α,β-ethylenically unsaturated acid and an epoxy compound, and (B) a cellulose derivative. Films are formed from the coating composition which exhibit excellent durability, impact resistance, shrink resistance, and gasoline resistance.

3,775,357

FINELY DIVIDED CARBON BLACK MODIFIED UNMASTICATED POLYMERS OF VINYL MONOMERS

Tibor Laszlo Nemeth, Passaic, N.J., assignor to The Pantasote Company of New York, Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 853,203, Aug. 26, 1969. This application June 23, 1972, Ser. No. 265,669
Int. Cl. C09k *3/00;* C08f *45/24, 29/18*
U.S. Cl. 260—17 A **8 Claims**

Finely divided particles of unmasticated vinyl resins having carbon black dispersed in the particles thereof and suitable for fluid bed coatings, flame spray coating, preparation of rigid extrusions, and direct pressing into molded articles, such as phonograph records, are produced by suitably incorporating a fine aqueous dispersion of carbon black into a suspension of vinyl monomer, the carbon black dispersing agent and the suspending agent being paired together so that when negatively charged suspensions are used, the carbon black dispersing agent is nonionic, amphoteric or cationic, and when positively charged

suspensions are used, the carbon black dispersing agent is anionic or amphoteric.

3,775,358

METALLIZABLE INSULATING VARNISH AND PROCESS OF FABRICATION THEREOF

Jean-Marie Cheype, Gagny, France, assignor to Societe Industrielle Honeywell Bull, Paris, France

Filed Aug. 11, 1971, Ser. No. 170,682
Claims priority, application France, July 22, 1970, 7026993
Int. Cl. C09d *3/52, 3/58*
U.S. Cl. 260—21 12 Claims

An insulating varnish comprising an epoxy resin, fatty acid, urea-formal resin and an organic diluent adapted to be polymerized by the addition of a hardener and suited for receiving a coating of a continuous, adhering metal layer after polymerization.

3,775,359

RIGID POLYVINYL CHLORIDE RESIN POWDER COMPOSITION FOR EXTRUSION PROCESSES

Joseph M. Georgiana, Mentor, James A. Rolls, Painesville, and Donald R. Voss, Cincinnati, Ohio, and Anthony M. Mierzwa, San Jose, Calif., and Robert A. Paradis, Painesville, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 658,337, Aug. 4, 1967, now Patent No. 3,567,669. This application June 12, 1970, Ser. No. 45,890
Int. Cl. C08f *29/18, 29/24, 45/58*
U.S. Cl. 260—23.7 R 1 Claim

A densified rigid polyvinyl chloride resin powder composition is described which is particularly adapted to the preparation of many different types of plastic articles by extrusion, although incorporating no resinous processing aids as required heretofore in rigid polyvinyl chloride resin powder compositions for the successful extrusion thereof. Having a bulk density ranging from 0.55 g./cc. to about 0.80 g./cc. depending upon the bulk density of the base resin incorporated, the composition contains, by weight of the resin, from 0.25% to 7% of a heat and light stabilizer therefor; from 0.5% to 20% of a filler-pigment; and from about 0.10% to 5% of a nonresinous lubricant.

3,775,360

GLOSSY EMULSION COATING COMPOSITIONS CONTAINING SURFACE TREATED PIGMENTS OF OILOPHILIC NATURE AND METHOD

Richard Glenn Smith, Chagrin Falls, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Continuation of application Ser. No. 574,988, Mar. 30, 1956, which is a continuation-in-part of abandoned application Ser. No. 230,841, June 9, 1951, which in turn is a continuation-in-part of abandoned application Ser. No. 774,897, Sept. 18, 1947. This application Feb. 4, 1965, Ser. No. 430,468
Int. Cl. C09c *3/00;* C09d *5/02*
U.S. Cl. 260—24 11 Claims

The present invention involves the production of glossy emulsion coating compositions which are produced by treating the surface of pigments with materials which render it oilophilic.

3,775,361

PREPARATION OF STABLE CONCENTRATED SOLUTIONS OF AROMATIC NITROGEN-LINKED CONDENSATION POLYMERS

James Henry Jensen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,482
Int. Cl. C08g *20/00, 51/44*
U.S. Cl. 260—32.6 NA 4 Claims

Solutions of aromatic nitrogen-linked condensation polymers such as polyamides and polyhydrazides are prepared by filtering a mixture of the polymer, a polar solvent, and a partially soluble chloride salt of a volatile nitrogenous base to remove the insoluble portion of the salt, adding a sufficient amount of a non-volatile inorganic base which forms a soluble chloride salt for conversion of the soluble portion of the salt of the volatile nitrogenous base and any remaining acidity of the solution to inorganic salts, followed by substantially complete removal from the mixture of the volatile nitrogenous base. The resultant solutions possess good stability of viscosity during exposure to the temperatures involved in concentration of the solution and in dry-spinning fibers from the solutions.

3,775,362

PROCESS FOR THE PRODUCTION OF PIGMENTED POLYAMIDES

Bert Brassat, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,253
Claims priority, application Germany, Feb. 17, 1971, P 21 07 485.1
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 N 12 Claims

An improved process for the production of pigmented polyamides obtained by activated anionic polymerisation of a mixture comprising a lactam having at least 6 ring members, an activator and alkaline catalyst in the presence of pigments, the improvement comprising adding an aluminium alcoholate to said mixture.

3,775,363

OXYMETHYLENE POLYMER COMPOSITIONS CONTAINING ACICULAR CALCIUM METASILICATE

David M. Braunstein, Fanwood, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,444
Int. Cl. C08g *51/10, 51/04*
U.S. Cl. 260—37 AL 8 Claims

An oxymethylene polymer composition is disclosed and claimed which comprises an oxymethylene polymer and acicular calcium metasilicate. The claimed composition has improved processability, dimensional stability strength values.

3,775,364

PROCESS FOR CURING METHYL METHACRYLATE IN THE PRESENCE OF PEROXY CATALYSTS

Ray B. Duggins, McCarthy Drive, R.D. 1, Chadds Ford, Pa. 19317

No Drawing. Continuation-in-part of abandoned application Ser. No. 838,688, July 2, 1969. This application Nov. 11, 1971, Ser. No. 197,974
Int. Cl. C08f *3/68*
U.S. Cl. 260—41 R 14 Claims

The use of a small amount of a promoter for the catalyst used in the polymerization and curing of methyl methacrylate compositions provides a substantial reduction in the curing time. Specifically, the use of 0.05–5 parts per hundred, based on the weight of the monomeric and polymeric constituents of the polymerizable composition, of water in conjunction with a catalyst such as the hemiperester of maleic acid or preferably a metal salt thereof accelerates the curing of methyl methacrylate compositions. The acceleration is particularly significant when fillers are incorporated into the methyl methacrylate composition and when certain mercaptan chain transfer agents are included.

3,775,365

PRODUCTION OF POLYPROPYLENE FIBERS

Ronald D. Mathis, Taylors, and James S. Dix, Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed June 14, 1972, Ser. No. 262,784
Int. Cl. C08f *45/08*
U.S. Cl. 260—41 R 5 Claims

A method of producing improved polypropylene fibers

which involves incorporating into the polymer a conductive, furnace carbon black as a pigment.

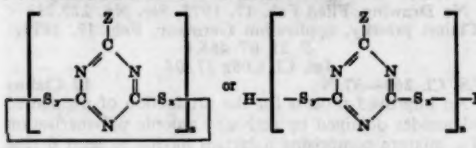
3,775,366

PROCESS FOR CROSS-LINKING OF NATURAL AND SYNTHETIC RUBBER CONTAINING FILLERS

Siegfried Wolff, Bruhl Bezirk Cologne, Hermann Westlinning, Kleinostheim, Werner Schwarze, Frankfurt am Main, and Werner Sroka, Bruhl Bezirk Cologne, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed June 16, 1971, Ser. No. 153,472
Int. Cl. C08c *11/10, 11/18, 11/60*
U.S. Cl. 260—41.5 R **20 Claims**

Natural and synthetic rubbers containing a filler are cross linked with triazines of the formulae



I or II

where *n* is 3 to 20, *x* and *y* are 1 to 4, Z is phenyl, alkylphenyl, alkoxy, alkylthio,

where R_2 and R_3 are hydrogen, alkyl, benzyl or cycloalkyl or together with the nitrogen form a ring having 5 to 8 atoms with up to one further nitrogen or oxygen atom.

3,775,367

FLAME RESISTANT POLYCARBONATES

Werner Nouvertné, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 44,869, June 9, 1970. This application Nov. 3, 1971, Ser. No. 195,456
Claims priority, application Germany, June 13, 1969, P 19 30 257.9
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.9 R **5 Claims**

High molecular weight, thermoplastic polycarbonates of divalent phenols having improved flame resistance are provided which contain perfluoroalkane sulphonates.

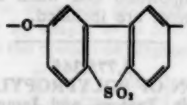
3,775,368

AROMATIC POLYMERS OF 2-BROMO-8-HYDROXY-5,5-DIOXODIBENZOTHIOPHEN

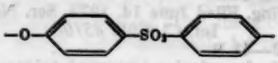
Victor Jeffrey Leslie, Potters Bar, Alan Branford Newton, London, and John Brewster Rose, Letchworth, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 56,405, July 20, 1970. This application Jan. 31, 1972, Ser. No. 222,030
Claims priority, application Great Britain, July 31, 1969, 38,440/69
Int. Cl. C08g *23/00*
U.S. Cl. 260—49 **4 Claims**

New aromatic polymers comprising units of the formula



and copolymers comprising such units and other units such as



are of higher softening point than polymers of the latter units alone. The new polymers may be made using an alkali metal salt of 2-bromo-8-hydroxy-5,5-dioxodibenzothiophen as monomer or by reacting 2,8-dibromo-5,5-dioxodibenzothiophen with an equivalent amount of an alkali metal hydroxide or a di-(alkali metal) salt of a bisphenol.

3,775,369

METHOD OF POLYMERIZING UNSATURATED MONOMERS WITH ORGANOCALCIUM COMPOUNDS

Carl A. Uraneck, William J. Trepka, and James D. Brown, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 29, 1971, Ser. No. 167,456
Int. Cl. C08g *15/00*
U.S. Cl. 260—63 R **39 Claims**

Polymerization initiators are produced from substantially pure calcium metal together with polynuclear aromatic compounds or polyaryl substituted ethylenes.

3,775,370

MANUFACTURE OF OXYLMETHYLENE POLYMERS

Bruno Sander, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed July 27, 1971, Ser. No. 166,573
Claims priority, application Germany, Aug. 5, 1970, P 20 38 908.6
Int. Cl. C08g *1/20*
U.S. Cl. 260—67 FP **6 Claims**

A process for the polymerization or copolymerization of trioxane, in which the catalyst used is a solution of an ester or mixed anhydride of perchloric acid in a diether of a glycol.

3,775,371

CHLORAL COPOLYMERS

Otto F. Vogl, Wilmington, Del.

No Drawing. Application Dec. 19, 1969, Ser. No. 886,739, now Patent No. 3,668,184, dated June 6, 1972, which is a continuation-in-part of abandoned application Ser. No. 731,622, May 23, 1968, which is a continuation-in-part of abandoned application Ser. No. 580,217, Sept. 19, 1966, which in turn is a continuation-in-part of abandoned application Ser. No. 558,631, June 20, 1966. Divided and this application Feb. 18, 1972, Ser. No. 227,684
Int. Cl. C08g *1/12, 9/18*
U.S. Cl. 260—67 TN **32 Claims**

An addition copolymer of chloral and at least one comonomer of the formula $R^3—N=C=X$ wherein X is oxygen or sulfur and R^3 is a non-substituted hydrocarbyl radical. Chloral is copolymerized with one or more isocyanate, isothiocyanate, diisocyanate, diisothiocyanate or ketene compounds to produce copolymers which are nonflammable and which can be made into a variety of useful, shaped objects. The process of making the copolymers involves preparing a homogeneous mixture of monomers and polymerization initiator at a temperature above the threshold polymerization temperature of the mixture cooling the homogeneous mixture below the threshold polymerization temperature and maintaining the homogeneous mixture quiescent during the polymerization.

3,775,372

PRODUCTION OF HIGH MOLECULAR WEIGHT LINEAR POLYESTERS

Lambert Gaston Jeurissen, Edegem, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,649
Claims priority, application Great Britain, Aug. 27, 1971, 51,236/70
Int. Cl. C08g *17/013*
U.S. Cl. 260—75 R **5 Claims**

High molecular weight linear polyesters are produced

by an ester interchange reaction between a glycol and a diester of terephthalic acid followed by polycondensation of the ester interchange products formed. The ester interchange reaction is carried out in the presence as a catalyst of a manganese(II) or zinc salt of a monocarboxylic acid of the formula:

X—Y—COOH

wherein X is an unsubstituted or alkyl-substituted aryl group and Y is a straight chain or branched chain alkylene group of 1 to 4 carbon atoms.

3,775,373

SEGMENTED THERMOPLASTIC COPOLYESTERS

James Richard Wolfe, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 30, 1972, Ser. No. 257,664

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R 9 Claims

Segmented thermoplastic copolyesters containing recurring ether-ester units derived from dicarboxylic acids and poly(alkylene oxide) glycol having a molecular weight of about 150–250 and a carbon to oxygen ratio of about 1.5–2.4 and recurring ester units derived from dicarboxylic acids and low molecular weight diols. The ester units constitute about 36–85% by weight of the polymer with 30–65% by weight of the polymer being 1,4-butylene terephthalate units.

3,775,374

THERMOPLASTIC COPOLYETHERESTERS BASED ON 2,6-NAPHTHALENE-DICARBOXYLIC ACID

James Richard Wolfe, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 5, 1972, Ser. No. 259,676

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R 8 Claims

A segmented thermoplastic copolyetherester containing recurring polymeric long chain ester units derived predominantly from 2,6-naphthalenedicarboxylic acid and long chain glycols and short chain ester units derived predominantly from 2,6-naphthalenedicarboxylic acid and low molecular weight diols. At least about 91% and preferably about 95% of the total number of short chain ester units must be derived from 2,6-naphthalenedicarboxylic acid and a single low molecular weight diol, preferably an aliphatic straight-chain diol containing 3, 5 or 7–10 carbon atoms. A polymer in the fiber-forming molecular weight range formed solely from the total short chain ester units would have a melting point of between 100 and 199° C.

3,775,375

THERMOPLASTIC COPOLYETHERESTERS BASED ON 2,6-NAPHTHALENE-DICARBOXYLIC ACID

James Richard Wolfe, Jr., 1907 Kynwyd Road, Wilmington, Del. 19810

No Drawing. Filed June 20, 1972, Ser. No. 264,578

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R 8 Claims

A segmented thermoplastic copolyetherester containing recurring polymeric long chain ester units derived predominantly from 2,6-naphthalenedicarboxylic acid and long chain glycols and short chain ester units derived predominantly from 2,6-naphthalenedicarboxylic acid and low molecular weight diols. About 66–95% by weight of the copolyetherester consists of short chain ester units.

3,775,376

PROCESS OF PREPARING POLYURETHANES FROM ALIPHATIC POLYISOCYANATE AND POLYHYDROXY COMPOUND IN THE PRESENCE OF CATALYST CONTAINING 4-N:N-DIMETHYLAMINOPYRIDINE AND DI-ALKYL TIN DIALKANOATE

Brian John Bircher, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 29, 1972, Ser. No. 267,536

Claims priority, application Great Britain, July 15, 1971, 33,311/71

Int. Cl. C08g *22/38*

U.S. Cl. 260—77.5 AC 4 Claims

A process for the manufacture of a polyurethane by the reaction between an organic polyisocyanate and an organic polyhydroxy compound wherein as catalyst there is employed a mixture of a dialkyl tin dialkanoate and a 4-N,N-dialkylaminopyridine. This catalyst mixture has a synergistic effect not found with other mixtures, and is particularly valuable for use with aliphatic polyisocyanates of low reactivity.

3,775,377

COMPOSITION FOR PREPARING RESIN COATING FILM AND THE LIKE

Tomoo Kokawa, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Hyogo-ken, Japan

No Drawing. Filed Aug. 3, 1972, Ser. No. 277,742

Claims priority, application Japan, Aug. 12, 1971, 46/60,656

Int. Cl. C08g *22/08*

U.S. Cl. 260—77.5 CR 12 Claims

A composition of the present invention for preparing a resin coating film contains a reaction product having an unsaturation equivalent of 800 to 3500 and a carboxylic equivalent of 300 to 1800, in which the reaction product is obtained by reacting an addition product of a polymerizable unsaturated vinyl monomer having one hydroxyl group and polyisocyanate with acrylic polymer having a hydroxy equivalent of 500 to 3000, a carboxylic equivalent of 200 to 1700 and a number average molecular weight of about 300 to about 100,000, and further contains a urethanated polymerizable compound obtained by reacting a mono- or di-hydroxy carboxylic acid, polyisocyanate compound and polymerizable unsaturated vinyl monomer having one hydroxyl group.

3,775,378

CHEMICAL BINDING OF AN AMINO ACID TO A CHLOROSULFONATED POLYMER CARRIER

Johannes J. Dahlmans, Maastricht, and Pieter L. Kerkhoffs, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,831

Claims priority, application Netherlands, Oct. 25, 1969, 6916122

Int. Cl. C08g *20/08*

U.S. Cl. 260—78 A 7 Claims

A process for chemically bonding an amino acid or an amino acid derivative to a chlorosulfonated polymer by reacting the free amino group with a chlorosulfonic acid group on the polymer. Additional amino acid groups can then be reacted with the carboxyl groups of the bonded amino group to form peptides and poly-peptides.

3,775,379

WET STRENGTH RESINS AND PROCESS FOR MAKING SAME FROM UNSATURATED DIACID ANHYDRIDE, POLYALKYLENE POLYAMINE, ALKYLENE DIAMINE, SATURATED ALIPHATIC DIACID AND EPICHLOROHYDRIN

Robert W. Hausslein, Lexington, Mass., and Hugh E. McCollum, Kew Gardens, N.Y., assignors to Amicon Corporation, Lexington, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 809,958, Mar. 24, 1969. This application May 13, 1971, Ser. No. 143,256

Int. Cl. C08g *20/38;* D21d *3/00*

U.S. Cl. 260—78 SC 10 Claims

An improved polyamino polyamide polymer is formed by reacting an acid anhydride with an alkylene amine having a secondary amino group between alkylene chains to form an amine acid organamide, and thereafter polymerizing the amine acid organamide. The resultant polyamino polyamide polymer is reacted with epihalohydrin and, optionally, subsequently crosslinked.

3,775,380

POLYMERIZATION OF AROMATIC NITRILES

Gordon H. Miller, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,169

Int. Cl. C08f *1/36, 1/70, 5/00*

U.S. Cl. 260—78.4 N 13 Claims

Aromatic nitriles having at least two —CN groups are polymerized by heating to a temperature of from about 410 to about 550° C. in the presence of a catalyst, such as a metal chloride, to form curable polymeric compositions which under the influence of heat and pressure can be converted to high strength, thermally stable, insoluble, infusible, polymeric materials.

3,775,381

PROCESS FOR PREPARING A MODIFIED PETROLEUM RESIN FOR USE IN GRAVURE INK

Hideo Hayashi, Kawasaki, Hisatake Sato, Yokohama, and Yusaku Mizuno, Kawasaki, Japan, assignors to Nippon Oil Company, Limited, Minato-ku, Tokyo, Japan

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,827

Claims priority, application Japan, Dec. 29, 1970, 46/121,058

Int. Cl. C08f *3/48, 3/70, 5/02*

U.S. Cl. 260—78.4 D 10 Claims

A process for preparing a modified petroleum resin suitable for gravure ink manufacture which comprises by polymerizing a fraction boiling in the temperautre range of from 140° C. to 220° C. obtained from thermally cracked petroleum distillates in the presence of a Friedel-Crafts type catalyst to produce a resin with a remarkably high softening point, for example, as high as 160° C., adding a predetermined amount of an unsaturated carboxylic acid or its anhydride to the polymerized resin thus obtained, and further esterifying the acid added resin with monohydric alcohols to obtain a resin having a softening point above 145° C.

3,775,382

PROCESS FOR MAKING HALOGENATED POLYARYLENE-1,3,4-OXADIAZOLES

Donald Lithgow Brydon, Abergavenny, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 12, 1972, Ser. No. 252,571

Claims priority, application Great Britain, May 14, 1971, 14,873/71; Nov. 19, 1971, 53,814/71

Int. Cl. C08g *33/04*

U.S. Cl. 260—78.4 R 5 Claims

Halogenated polyarylene-1,3,4 - oxadiazole polymers having improved flammability properties compared with the corresponding unhalogenated polymers. The halogen content is at least 2% by weight. Halogens are selected from bromine, iodine, chlorine, and a mixture of all or any two of these. Fibres from halogenated polymers of inherent viscosity >1 are strong and readily drawable.

3,775,383

ELECTRICALLY CONDUCTIVE POLYMERS AND PRODUCTION THEREOF

Hans Zweifel and Theodor Volker, Freiburg, Switzerland, assignors to Lonza Ltd., Gampel, Valais, near Basel, Switzerland

No Drawing. Filed May 12, 1972, Ser. No. 252,574

Claims priority, application Switzerland, Apr. 5, 1972, 4,948/72

Int. Cl. C08f *1/28, 3/48, 15/02*

U.S. Cl. 260—78.4 R 25 Claims

A process for the production of an electrically conductive polymer of maleic anhydride is disclosed. The process involves admixing maleic anhydride, dissolved in an organic solvent which is substantially anhydrous, with a trialkylphosphine, and polymerizing the maleic anhydride at a temperature between —40° and 140° C., whereby an electrically conductive polymer of maleic anhydride is formed.

The electrically conductive polymer of maleic anhydride contains cross conjugated keto olefin units. Also, the electrically conductive polymer is a semiconductor, which has a specific conductivity of about 1×10^{-9} ohm per cm. at room temperature. The specific conductivity increases approximately linearly with increasing temperatures.

3,775,384

POLYMER AND METHOD OF MAKING

Walter P. Barie, Jr., Shaler Township, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,267

Int. Cl. C08f *27/18*

U.S. Cl. 260—78.4 D 6 Claims

A solid, infusible polymer is made by cross-linking the liquid resin condensation product of maleic anhydride, phthalic anhydride and propylene glycol or ethylene glycol in a 1:1:2 molar ratio with 40 to 50 weight percent based on the liquid resin of tetraallyl benzophenonetetracarboxylate. The resulting polymer exhibits a very high heat distortion temperature and a fiber glass laminate of the polymer exhibits a very high flexural strength.

3,775,385

METHOD OF IMPARTING AN ANAEROBIC CURABLE CHARACTERISTIC TO POLYMERIZABLE MONOMERS

Masayoshi Ozono and Masakatsu Suzuki, Tokyo, Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 25, 1971, Ser. No. 175,002

Claims priority, application Japan, May 10, 1971, 46/30,969

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 25 Claims

A method of imparting an anaerobic curable characteristic to polymerizable monomers, which comprises adding 0.01–4.0 parts by weight of ortho-sulfo benzoic acid imide and 0.01–10.0 parts by weight of mercaptans to 100 parts by weight of specific polymerizable monomers.

According to the invention, the monomers are treated to have an excellent anaerobic curable characteristic; that is,

to have a rapid anaerobic curing property, an excellent sticking property, and an excellent storage stability.

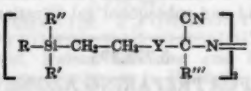
3,775,386

POLYMERS HAVING SILICON CONTAINING END GROUPS AND A PROCESS FOR THEIR PREPARATION

Joel D. Citron, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 25, 1971, Ser. No. 146,800
Int. Cl. C08f 1/78
U.S. Cl. 260—80.3 E 15 Claims

This invention provides a polymer curable with moisture, said polymer prepared by polymerizing at least one ethylenically unsaturated monomer, reactive with an azo nitrile and free of functional groups reactive with aryloxysilanes and alkoxysilanes, with an azonitrile of the formula



where R is alkyl, fluoro-substituted alkyl wherein the fluoro substituent is no closer than a gamma position with respect to Si, phenyl, lower alkyl-substituted phenyl, fluoro-substituted phenyl, benzyl or lower alkyl-substituted benzyl; R′ is lower alkoxy, aryloxy, alkaryloxy, lower aralkoxy; R″ is independent of R and R′ and is any of the groups representing R or R′; R‴ is a lower alkyl, lower alkyl-substituted phenyl, benzyl, or lower alkyl-substituted benzyl wherein substitution is at other than an alpha position; Y is a saturated lower alkylene. Some polymers are particularly useful as moisture curable caulks.

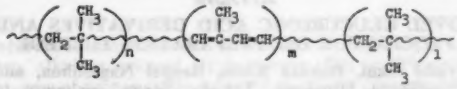
3,775,387

PROCESS FOR PREPARING CONJUGATED DIENE BUTYL

Francis P. Baldwin, Summit, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Feb. 23, 1972, Ser. No. 228,728
Int. Cl. C08d 3/04, 13/32
U.S. Cl. 260—85.3 H 16 Claims

Dehydrohalogenation of halogenated butyl rubber to produce a butyl rubber having conjugated double bonds, a major portion of which are in the linear backbone. The process produces a composition having the formula:



where $n+1$ represent the number of isoolefin units incorporated in the butyl rubber polymer backbone, and m represents the number of conjugated diolefin units present, substantially as isolated units. The process for preparing the above compositions comprises contacting a solution of halogenated butyl rubber with: (1) a soluble metal carboxylate, where the metal is selected from the metals of Groups I*b*, II*b*, IV*a* and VIII of the Periodic Table; (2) a soluble carboxylic acid; and (3) an oxide or hydroxide of a metal selected from Groups I*a* or II*a* of the Periodic Table.

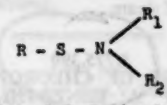
3,775,388

ODOR IMPROVEMENT OF XANTHOGEN-MODIFIED CHLOROPRENE POLYMERS

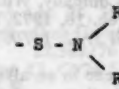
Ausat Ali Khan, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,659
Int. Cl. C08d 3/14; C08f 15/24, 3/32
U.S. Cl. 260—86.3 R 6 Claims

Polymerizing chloroprene in an alkaline aqueous emulsion in the presence of a dialkyl xanthogen disulfide chain transfer agent to form a chloroprene polymer latex and adding to the polymer latex at a time when the desired degree of polymerization has been reached a compound having the structure



wherein R is hydrocarbyl, 2-thiazolyl, 2-benzothiazolyl radicals or



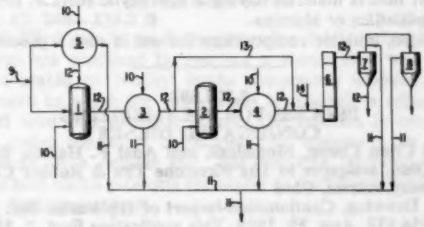
R_1, R_2, R_3, and R_4 are alkyl, cycloalkyl, or aralkyl and R_1 and R_2 or R_3 and R_4 together can form a saturated ring with the nitrogen.

3,775,389

PROCESS FOR THE PURIFICATION OF POLYOLEFINS

Anton Hundmeyer, Burghausen, Fritz Lochner, Cologne, and Gottfried Piekarski, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed June 14, 1971, Ser. No. 152,761
Claims priority, application Germany, June 15, 1970, P 20 29 539.0
Int. Cl. C08f 1/44, 1/88
U.S. Cl. 260—88.2 R 10 Claims



A process for the purification of polyolefins polymerized in the presence of a catalyst system of silicon compounds with siliconhydrogen compounds, metal compounds of subgroups IV to VI of the Periodic Table and, optionally, of the main group III of the Periodic Table, and in the presence of inert organic solvents which consists in the steps of (1) utilizing, as said inert organic solvent and as the purification solvent, a solution of saturated hydrocarbons having 6 to 9 carbon atoms and a constant boiling point, (2) decomposing a polyolefin suspension in said solvent containing said catalyst system by the action of said solvent containing from 1% to 40% by volume of an alkanol having 2 to 3 carbon atoms and mixtures thereof, under a dry gas atmosphere at a temperature of from 50° C. to 100° C., (3) separating moist polyolefin from said solvent, (4) washing said moist polyolefin with said solvent containing from 0 to 40% by volume of an alkanol having 2 to 3 carbon atoms and mixtures thereof at a temperature of from 50° C. to 100° C., (5) continuously drying said washed moist polyolefin, and (6) recovering purified polyolefins substantially free of ash and low molecular weight polymers. Optionally, (1) the polyolefin suspension from the polymerization may be separated from the inert solvent and washed with the solvent mixture before the decomposing step, (2) the washed moist polyolefin may be pulped with the solvent alcohol mixture, the suspension separated and the moist

polyolefin again washed with the solvent alcohol mixture, (3) the decomposing step may be conducted in the presence of small amounts of air or oxygen and (4) the continuous drying step may be conducted in the presence of small amounts of steam.

3,775,390

POLYMERIZATION OF CHLOROPRENE IN THE PRESENCE OF A BENZOTHIAZOLESULFENAMIDE

Ausat Ali Khan, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,658
Int. Cl. C08f *3/32, 15/00, 15/24*
U.S. Cl. 260—92.3 15 Claims

Polymerizing chloroprene in an alkaline aqueous emulsion in the presence of both an organic sulfur-containing chain transfer agent and a benzothiozolesulfenamide.

3,775,391

VINYL POLYMERISATION

James Robert Jennings, Philip Dennis Roberts, and David Gavin Simon, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,759
Claims priority, application Great Britain, Aug. 4, 1971, 36,628/71
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.8 R 33 Claims

Polymerisation of vinyl or vinylidene halides using as initiator a mixture of a transition metal compound and an organoaluminium or organozinc compound including a ligand derived from an oxime or a hydroxy ester. The transition metal compound is chemically bonded to an inert matrix material having a hydroxylic surface, for example silica or alumina.

Also, initiator compositions for use in such a process.

3,775,392

PROCESS FOR POLYMERIZING CONJUGATED DIENES

Tai Chun Cheng, Mogadore, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 854,272, Aug. 29, 1969. This application Sept. 7, 1971, Ser. No. 178,490
Int. Cl. C08d *1/20, 3/04, 3/06*
U.S. Cl. 260—94.2 T 17 Claims

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product. This catalyst system comprises (1) a sodium hydrocarbon compound having 1–10 carbon atoms in which the hydrocarbon portion is a primary, secondary or tertiary alkyl radical, and (2) a potassium tertiary alkoxide of 4–10 carbon atoms. The diene polymers produced by this process have controllable molecular weights in the range of 25,000 to 1,000,000, preferably 100,000–500,000, broad molecular weight distribution, glass transition temperatures higher than normally obtained, high degree of branching and are more easily processed in the production of rubber and other compositions for commercial use.

3,775,393

AMMONIA EXTRACTION OF UNICELLULAR MICROORGANISMS

Cavit Akin, Oakbrook, and Kwei C. Chao, Homewood, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Dec. 3, 1970, Ser. No. 94,941
Int. Cl. A23j *3/00*
U.S. Cl. 260—112 9 Claims

Improved quality single-cell protein food materials are prepared by extraction of unicellular microorganisms with aqueous ammonia at 90° to 125° C. for from 5 to 60 minutes. Nucleic acids are removed from the cells while the protein content remains high.

3,775,394

PROCESS FOR THE ISOLATION AND PARTIAL PURIFICATION OF CALCITONIN

Claude D. Arnaud, Jr., Rochester, Minn., assignor to Research Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 740,028, June 26, 1968. This application July 14, 1971, Ser. No. 162,669
Int. Cl. C07c *103/52*; C07g *7/00*; C08h *1/00*
U.S. Cl. 260—112.5 6 Claims

Relatively pure calcitonin is isolated from defatted animal tissue containing calcitonin-secreting cells by extraction, with n-butanol-acetic acid-water, purification with silicic acid and subsequent gel filtration.

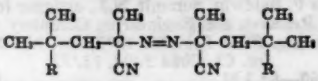
3,775,395

METHOD FOR PREPARING AZOBISVALERONITRILES

Shunichi Koyanagi, Kinya Ogawa, and Kenichi Taguchi, Naoetsu, Japan, assignors to Shinetsu Chemical Company

Filed June 30, 1970, Ser. No. 51,395
Claims priority, application Japan, July 7, 1969, 44/54,020; Mar. 24, 1970, 45/24,649
Int. Cl. C07c *107/02*
U.S. Cl. 260—192 13 Claims

When ketones, hydrogen cyanide or alkali cyanide, and hydrazines are reacted in an aqueous medium containing some surface active agents, with the pH of the reaction medium kept substantially in the range between 6.0 and 11.0, and subsequently hydrazo compound thus prepared is oxidized, azobisvaleronitrile represented by:



(where R is either a hydrogen atom or a radical selected from the group consisting of alkyl radical, alkoxy radical, and aryl radical) is obtained in good yield.

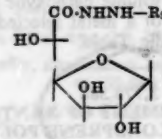
3,775,396

NOVEL GLUCURONIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Kiyoshi Okui, Rokuro Kaifu, Renpei Nagashima, and Yoshikazu Hinohara, Takada, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

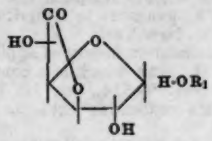
Filed May 12, 1971, Ser. No. 142,671
Claims priority, application Japan, May 14, 1970, 45/40,525
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 28 Claims

Novel glucuronic acid derivatives of the formula



wherein R_1 is a lower alkyl group, and R_2 is a phenyl group which may contain one or more substituents selected from the group consisting of a lower alkyl group, a lower alkoxy group, a nitro group and a halogen atom, which are useful as a pharmaceutical, in particular, for the prevention and treatment of liver function disorders,

are disclosed. The glucuronic acid derivatives can be prepared by reacting an alkyl-D-glucofuranosiduronolactone of the formula



with a phenylhydrazine compound of the formula

$$H_2N{\cdot}NH{-}R_2$$

wherein R_1 and R_2 are as defined above.

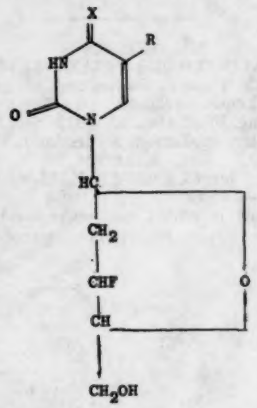
3,775,397

NOVEL CYTOSTATIC 2',3'-DIDEOXY-3'-FLUORO-PYRIMIDINE-NUCLEOSIDES

Gerhard Etzold, Rainer Hintsche, and Peter Langen, Berlin, Germany, assignors to Deutsche Akademie der Wissenschaften zu Berlin, Berlin-Adlershof, Germany

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,068
Int. Cl. C07d *51/52*
U.S Cl 260—211.5 R **3 Claims**

Novel 2',3'-dideoxy - 3' - fluoro-pyrimidine-nucleosides characterized by cytostatic activity having the formula:



wherein X designates O, S or NH and R designates hydrogen, alkyl, substituted alkyl, halogen, OH or SH, and a process of preparing the same by reacting a corresponding at the oxygen of the 3'-OH group substituted pyrimidine nucleoside with a fluorinating agent.

3,775,398

N-OXIDE OF DOUBLE STRANDED RNA

Michael Raymond Harnden, Horsham, England, assignor to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,393
Claims priority, application Great Britain, Apr. 23, 1970, 19,448/70
Int. Cl. C07d *51/50*
U.S. Cl. 260—211.5 R **2 Claims**

N-oxides of natural double-stranded ribonucleic acids and salts thereof, which are themselves double-stranded, prepared by reacting double-stranded ribonucleic acids with hydrogen peroxide or a peracid, are described. The new RNA derivatives are interferon inducers and/or have antiviral activity and are less toxic than the parent RNA's. Natural RNA's have adenine, cytosine, uracil and guanine bases linked to repeating ribose/phosphate backbone units and different degrees of oxidation of the bases can be carried to produce a variety of new N-oxide derivatives. The conversion to single-stranded material is avoided by limiting the extent of oxidation and leaving some unoxidized base sites. Formulation into aerosols, injectibles and topicals is described.

3,775,399

N-OXIDE OF POLY I:POLY C

Michael Raymond Harnden, Horsham, England, assignor to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed Apr. 29, 1971, Ser. No. 138,783
Claims priority, application Great Britain, May 8, 1970, 22,302/70
Int. Cl. C07d *51/50*
U.S. Cl. 260—211.5 R **3 Claims**

N-oxides and salts of Poly I:Poly C which are themselves double-stranded, methods of making such N-oxides and salts and pharmaceutical compositions thereof are described. The new Poly I:Poly C derivatives have reduced toxicity and are characterized by broad antiviral activity. The methods comprise oxidation with hydrogen peroxide or a peracid which is controlled to avoid separation of the double-stranded material into single-stranded material.

3,775,400

STARCHES MODIFIED WITH N-VINYL COMPOUNDS

Otto B. Wurzburg, Whitehouse Station, and Wadym Jarowenko, Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 3, 1972, Ser. No. 294,551
Int. Cl. C08b *19/04*
U.S. Cl. 260—233.3 R **11 Claims**

Modified starch products possessing labile substituent groups are produced by reacting a starch base with N-vinyl amido or N-vinyl imido compounds wherein the nitrogen to which the vinyl group is attached is adjacent to at least one carbonyl group. The reaction is carried out under controlled conditions and, optionally, in the presence of a neutral salt. The resulting inhibited and stabilized starch products are useful as thickeners, binders, and dusting powders.

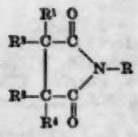
3,775,401

α-ARYL-SUCCINIMIDE-SULPHONAMIDE DERIVATIVES

Rolf Wilhelm Pfirrmann, Lucerne, Switzerland, assignor to Ed. Geistlich Sohne A.G. fur Chemische Industrie, Lucerne, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 692,635, Dec. 22, 1967. This application Aug. 4, 1971, Ser. No. 169,063
Claims priority, application Great Britain, Dec. 23, 1966, 57,731/66
Int. Cl. A61k *27/00*; C07d *27/10*
U.S. Cl. 260—239.6 **13 Claims**

Compounds of the general formula

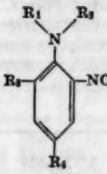


where R represents an aryl or araliphatic group substituted in the aromatic ring with at least one sulphonamido group, the nitrogen atom of which may be joined

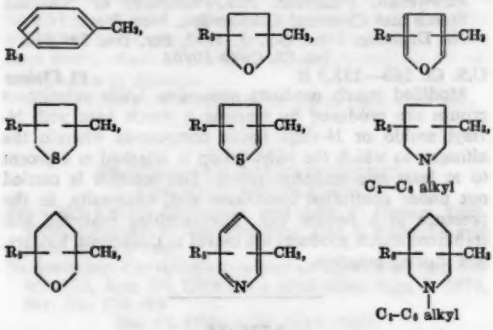
to a further ring substituent to form a —CO—NHSO$_2$— chain, and R^1, R^2, R^3 and R^4 are each H, alkyl of 1–5 carbon atoms or an aryl group, at least one of R^1, R^2, R^3 and R^4 being an aryl group and physiologically acceptable salts thereof with bases. The compounds are useful in the treatment of epilepsy.

3,775,402
3,5-DINITROSULFANILAMIDES
Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company
No Drawing. Original application Feb. 24, 1970, Ser. No. 18,407, now Patent No. 3,686,230, dated Aug. 22, 1972. Divided and this application June 26, 1972, Ser. No. 268,221
Int. Cl. C07c *143/88*
U.S. Cl. 260—239.6 **5 Claims**

The compounds of the subject invention are represented by the following generic formula



wherein R_1 is selected from the group consisting of



wherein R_5 is H; C_1–C_6 alkyl, alkenyl, haloalkyl, halogen, NO_2; R_2 is hydrogen, C_1–C_6 straight or branched chain alkyl, alkenyl, or alkynl, C_3–C_8 cycloalkyl, C_4–C_{10} cycloalkylalkyl, C_1–C_6 alkoxyalkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 haloalkyl, C_1–C_6 cyanoalkyl, C_2–C_6 acylalkyl, C_1–C_6 alkylmercaptoalkyl, and related sulfoxide and sulfone analogs; R_3 is H, NO_2, halogen, C_1–C_6 alkyl; and R_4 is H, C_1–C_6 alkyl, haloalkyl, cycloalkyl, halogen, CF_3, NO_2, C≡N, $CH_3S(O)_x$, $C_2H_5S(O)_x$, $C_3H_7S(O)_x$, wherein x is 0, 1 or 2, $SO_2NR_6R_7$ wherein R_6 and R_7 can be the same as R_2 or R_6 and R_7 when taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, aziridino, or morpholino ring.

3,775,403
DIPHENYL SULFONES
Tsung-Ying Shen, Westfield, William V. Ruyle, Scotch Plains, Michael W. Fordice, Clark, and Norman P. Jensen, Watchung, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Sept. 17, 1970, Ser. No. 73,245
Int. Cl. C07d *31/48*
U.S. Cl. 260—239.8 **9 Claims**

New substituted diphenyl sulfones useful in reducing mortality and decreasing lesion incidence of poultry exposed to Marek's disease are disclosed.

3,775,404
SYNTHESIS OF 13-ALKYL-6-CHLOROGONA-4,6-DIEN-3-ONES
George C. Buzby, Jr., Philadelphia, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 800,337, Jan. 31, 1969, which is a continuation of application Ser. No. 590,514, Oct. 31, 1966, both now abandoned. This application Sept. 9, 1969, Ser. No. 856,491
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R **10 Claims**

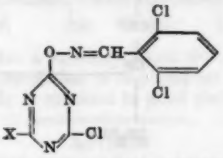
This invention relates to 13-alkyl-17β-hydroxygona-4,6-dien-3-ones and their esters in which the 13-alkyl contains 2–5 carbon atoms, and to intermediates in their preparation. The products have anti-estrogenic activity combined with a wide separation between anti-estrogenic and progestational effects.

3,775,405
2,6-DICHLOROBENZALDEHYDE HYDRAZONES
William F. Bruce, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Sept. 3, 1971, Ser. No. 177,883
Int. Cl. C07d *23/00*
U.S. Cl. 260—240 G **3 Claims**

Hydrazones of 2,6-dichlorobenzaldehyde exhibiting central nervous system depressant activity.

3,775,406
BENZALDOXIME-(s-TRIAZINYL)-ETHERS
Werner Trueb, Therwil, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland
No Drawing. Filed Mar. 13, 1972, Ser. No. 234,342
Claims priority, application Switzerland, Mar. 19, 1971, 4,122/71
Int. Cl. C07d *55/46, 55/48*
U.S. Cl. 260—240 G **11 Claims**

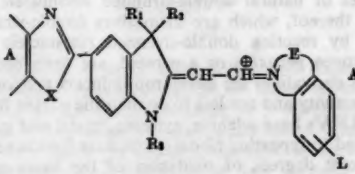
The present invention concerns novel 2,6-dichlorobenzaldoxime-O-[s-triazinyl-(6)]-ethers of the formula:



wherein X is chlorine, —NR_1R_2, wherein R_1 and R_2 are each hydrogen, alkyl, phenyl or phenyl substituted by chlorine, bromine, alkyl, chloroalkyl or bromoalkyl, —SR_3, wherein R_3 is alkyl or phenyl or —OR_4, wherein R_4 is alkyl or phenyl.

3,775,407
BASIC AZOLOINDOLINE DYESTUFFS
Horst Harnisch, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 9, 1971, Ser. No. 179,183
Claims priority, application Germany, Sept. 9, 1970, P 20 44 619.9
Int. Cl. C09b *23/00*
U.S. Cl. 260—240.1 **7 Claims**

Basic dyestuffs of the formula



processes for their manufacture and their use for dyeing and printing of natural and synthetic materials, particularly of polyacrylnitrile and copolymers of acrylnitrile with other vinyl compounds.

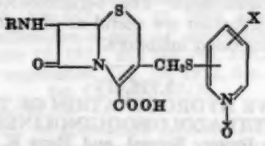
3,775,408

PROCESS FOR PRODUCING CEPHALOSPORIN DERIVATIVES

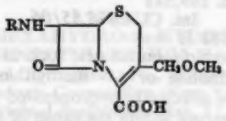
Michihiko Ochiai, Suita, Osami Aki, Kawanishi, Akira Morimoto, Suita, Taiiti Okada, Kyoto, and Katsutada Masuda, Ashiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,744
Claims priority, application Japan, Dec. 24, 1970, 45/127,468
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 9 Claims

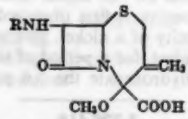
The process of reacting a cephalosporin compound of the formula



wherein R is H or an acyl group and X is H or halogen or a salt thereof with methanol in the presence of a divalent copper compound results in the production of (A) the corresponding compound of the formula

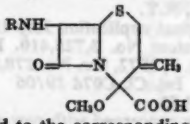


or a salt thereof, (B) the corresponding compound of the formula



or a salt thereof, or (C) a mixture of said compounds or their salts.

The 3-methoxymethyl compounds have antibacterial properties. The compounds of the formula



can be isomerized to the corresponding 3-methoxymethyl compounds.

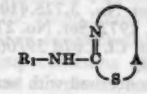
3,775,409

1,3-THIAZINES

Kálmán Hársányi, Károly Nádor, Kálmán Takács, Dezsö Korbonits, Pál Kiss, Antal Simay, István Bodrogi, László Tardos, and György Leszkovszky, Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyard Rt., Budapest, Hungary

No Drawing. Filed Oct. 31, 1969, Ser. No. 873,113
Claims priority, application Hunngary, Nov. 8, 1968, CI-832
Int. Cl. C07d *93/08*
U.S. Cl. 260—243 R 13 Claims

A compound selected from the group which consists of a compound of the formula



wherein R_1 stands for the hydrogenated or nonhydrogenated naphthyl radical or a naphthalene group containing an organic substituent with 1 to 6 carbon atoms and A stands for a group of the formula $—CH_2—CH(R_2)—$, $—CH_2—CH(R_3)—CH_2—$ or $—CH(R_3)—CH_2—CH_2—$, wherein R_2 stands for an alkyl group with 1 to 7 carbon atoms and R_3 stands for a hydrogen atom or an alkyl having 1 to 7 carbon atoms, and the pharmaceutically acceptable acid addition salts of the compound of said formula.

3,775,410

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

Burton G. Christensen, 2665 Skytop Drive, Scotch Plains, N.J. 07080, and Raymond A. Firestone, 60 Hunter Ave., Fanwood, N.J. 07023

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,053
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—243 C 8 Claims

A process is provided for preparing 7-acylamino-7-methoxycephalosporins which comprises methylating a 7-acylamino-7-hydroxycephalosporin. The final products have antibacterial activity.

3,775,411

TRIAZINE DERIVATIVES AS ANTIOXIDANTS

Heimo Brunetti, Erlenstrasse 9, Reinach, Switzerland

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,592
Claims priority, application Switzerland, Nov. 9, 1970, 16,548/70
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS 7 Claims

New 2,4 bis - (3,5 - di-tert.butyl-4-hydroxy-phenoxy)-s-triazines are stabilizers for organic materials. They are prepared by reacting the bis-[imino-carbonic acid-(3,5-di-tert.butyl-4-hydroxyphenyl)ester]-imide with a corresponding carboxylic acid chloride.

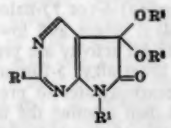
3,775,412

SUBSTITUTED 2 - PHENYL-5H-PYRROLO[2,3-d] PYRIMIDINE - 5,6-(7H)-DIONES USEFUL AS CNS DEPRESSANTS

Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 874,049, Nov. 4, 1969, now Patent No. 3,631,044, dated Dec. 28, 1971. This application May 10, 1971, Ser. No. 142,015
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.4 F 3 Claims

The disclosure is directed to substituted 2-phenyl-5H-pyrrolo[2,3-d]pyrimidine-5,6-(7H)diones, and a process for their preparation, having the structural formula:



where

R^1 is hydrogen or lower alkyl,
R^5 is phenyl, halophenyl, lower alkylphenyl or lower alkoxyphenyl; and
R^6 is methyl or ethyl.

The compounds have pharmacological activity as central nervous system depressants in that they decrease motor activity and decrease respiration in a host.

3,775,413

DIASTEREOISOMERIC SALTS OF 3,4-(1',3'-DIBENZYL - 2' - OXO-IMIDAZOLIDO)-2-OXO-5-HYDROXY-TETRAHYDROFURAN

Masataka Shibasaki, Toyonaka, Mitsuru Matsubara, Kobe, Jiro Ohnogi, Toyonaka, and Keijiro Shibata, Takatsuki, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed June 13, 1972, Ser. No. 262,355

Int. Cl. C07d *43/24*

U.S. Cl. 260—284 **2 Claims**

Diastereoisomeric salts of 3,4-(1',3'-dibenzyl-2-oxo-imidazolido)-2-oxo-5-hydroxy-tetrahydrofuran and cinchonidine or quinine which are useful as intermediates in the synthesis of d-biotin.

3,775,414

PROCESS FOR THE PREPARATION OF 14-HYDROXYMORPHINAN DERIVATIVES

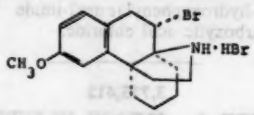
Ivo Monkovic, Candiac, Quebec, and Terry Thomas Conway, Montreal, Quebec, Canada, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed May 10, 1972, Ser. No. 251,879

Int. Cl. C07d *43/28*

U.S. Cl. 260—285 **5 Claims**

N - substituted - 14 - hydroxy - 3 - substituted - morphinan derivatives have been found to possess potent narcotic agonist or antagonist activity. In particular, the compound 3 - 14 - dihydroxy - N - cyclopropylmethylmorphinan has been found to possess potent narcotic antagonist activity. A new and more efficient total synthesis for the preparation of these compounds is described herein via 3-methoxy-9-bromonorhasubanan hydrobromide having the formula



3,775,415

LOWER-ALKYL 6 (OR 7)-HALO-5-(AMINOALKYL-AMINO)-8-QUINOLINECARBOXYLATES

Sydney Archer, Bethlehem, and Denis M. Bailey, East Greenbush, N.Y., assignors to Sterling Drug, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 882,723, Dec. 5, 1969, now Patent No. 3,692,790, dated Sept. 19, 1972, which is a continuation-in-part of abandoned application Ser. No. 690,795, Dec. 15, 1967. This application Aug. 5, 1971, Ser. No. 169,515

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R **4 Claims**

5 - (aminoalkylamino)-6-(or 7)-halo-8-quinolinemethanols, their lower-alkyl ethers and lower-alkanoyl esters, having schistosomacidal activity are prepared by reducing the corresponding lower-alkyl 5-(aminoalkylamino)-6(or 7)-halo-8-quinolinecarboxylates to prepare said 8-quinolinemethanols, and then reacting the latter with a lower-alkanol in the presence of an acid to obtain the lower-alkyl ethers and reacting the 8-quinolinemethanols with a lower-alkanoylating agent, e.g., acid chloride or anhydride, to form their lower-alkanoate esters. The lower-alkyl 5-(aminoalkylamino)-6(or 7)-halo-8-quinoline-carboxylates and their preparation are claimed herein.

3,775,416

s-TRIAZOLO[3,4-a]ISOQUINOLINES AND DERIVATIVES THEREOF

Hans K. Reimlinger, Brussels, and Jan Joseph Maurice Vandewalle, Mortsel, Belgium, assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 849,208, Aug. 11, 1969, which is a continuation-in-part of application Ser. No. 634,077, Apr. 27, 1967, both now abandoned. This application July 21, 1971, Ser. No. 164,919

Int. Cl. C07d *55/06*

U.S. Cl. 260—288 R **1 Claim**

Novel s-triazolo[3,4-a]isoquinolines are prepared by (a) contacting 1-haloisoquinolines with hydrazine, (b) contacting the resulting 1-hydrazinoisoquinoline with an acidic condensing agent and (c) separating the s-triazolo-[3,4-a]isoquinoline. Thereafter, the s-triazolo[3,4-a]isoquinoline can be reduced to provide 5,6-dihydro-s-triazolo[3,4-a]isoquinolines. The s-triazolo[3,4-a]isoquinolines of this invention are useful as ultraviolet light absorbers and corrosion inhibitors.

3,775,417

SELECTIVE HYDROGENATION OF TRI- AND TETRAZOLOISOQUINOLINES

Ernest H. de Ruiter, Beersel, and Hans K. Reimlinger, Brussels, Belgium, assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 743,624, July 10, 1968. This application Aug. 5, 1971, Ser. No. 169,521

Int. Cl. C07d *55/06*

U.S. Cl. 260—288 R **1 Claim**

Tri- and tetrazoloisoquinolines, such as 3-amino-s-triazolo[3,4-a]isoquinoline or 5 - methylthiotetrazolo[5,1-a] isoquinoline, are selectively hydrogenated in the 5,6 position at a temperature within the range of from about 50° to about 160° C. provided that the temperature selected is not more than about 50° C. higher than the temperature at which hydrogenation is first observed, in the presence of a catalytic quantity of a nickel, platinum, or palladium hydrogenation catalyst, for a period of time and at a pressure sufficient to hydrogenate the 5,6 position.

3,775,418

3-[(3-AZASPIRO[5,5]UNDECINO)METHYL]-3-QUINUCLIDINOL

John R. Potoski, Rosemont, and Meier E. Freed, Paoli, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application July 15, 1970, Ser. No. 55,264, now Patent No. 3,725,410. Divided and this application Aug. 7, 1972, Ser. No. 278,664

Int. Cl. C07d *39/06*

U.S. Cl. 260—293.53 **1 Claim**

This invention is concerned with new and novel derivatives of 3-aminomethyl-3-quinuclidinols which are pharmacologically active as CNS depressants useful in the calming of animals. Further, this invention is concerned with methods of producing the new and novel 3-aminomethyl-3-quinuclidinols. Still further, this invention is concerned with 3-methylenequinuclidine oxide which is a new and novel intermediate useful in the production of the new and novel 3-aminomethyl-3-quinuclidinol derivatives of the present invention.

3,775,419

3-METHYLENEQUINUCLIDINE OXIDE

John R. Potoski, Rosemont, and Meier E. Freed, Paoli, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application July 15, 1970, Ser. No. 55,264, now Patent No. 3,725,410. Divided and this application Aug. 7, 1972, Ser. No. 278,690

Int. Cl. C07d *39/06*

U.S. Cl. 260—293.53 **1 Claim**

This invention is concerned with new and novel deriva-

tives of 3-aminomethyl-3-quinuclidinols which are pharmacologically active as CNS depressants useful in the calming of animals. Further, this invention is concerned with methods of producing the new and novel 3-aminomethyl-3-quinuclidinols. Still further, this invention is concerned with 3-methylene-quinuclidine oxide which is a new and novel intermediate useful in the production of the new and novel 3-aminomethyl-3-quinuclidinol derivatives of the present invention.

3,775,420

N-OXIDES OF INDOLE FUSED HETEROCYCLIC COMPOUNDS

David R. Herbst, Wayne, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 38,913, May 19, 1970, which is a continuation-in-part of application Ser. No. 889,867, Dec. 22, 1969, now abandoned, and a continuation-in-part of applications Ser. No. 153,441, June 15, 1971, and Ser. No. 258,286, May 31, 1972. This application Aug. 10, 1972, Ser. No. 279,419

Int. Cl. C07d *27/36*

U.S. Cl. 260—293.53 **10 Claims**

The N-oxides of substituted 2,3,5,6,11,11b-hexahydro-1H-indolizino[8,7-b]indoles and 1,2,3,4,6,7,12,12b-octahydroindolo[2,3-a]quinolizines are described. The compounds possess analgesic activity.

3,775,421

5a,6,7,8,9,9a-HEXAHYDRO-9a-HYDROXYPYRIDO [2,1-b]BENZOTHIAZOLIUM HALIDES

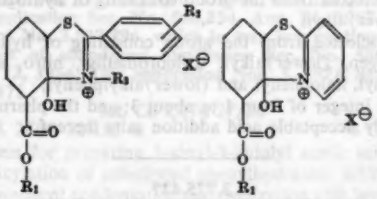
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Mar. 17, 1971, Ser. No. 125,410, now Patent No. 3,694,449, dated Sept. 26, 1972. Divided and this application May 15, 1972, Ser. No. 253,384

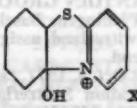
Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 B **2 Claims**

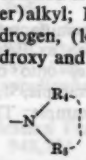
Novel pharmacologically active compounds have been prepared of the formulae



and



wherein R_1 and R_2 are selected from the group consisting of hydrogen and (lower)alkyl; R_2 is selected from the group consisting of hydrogen, (lower)alkyl, nitro, halogen, (lower)alkoxy, hydroxy and



wherein R_4 and R_5 when not concatenated are independently selected from the group consisting of hydrogen and (lower)alkyl and when concatenated form a radical selected from the group consisting of piperazinyl, piperidinyl, pyrrolidinyl and morpholinyl; X is halogen.

3,775,422

UNSYMMETRICAL 1,4-DIHYDRO-4-ARYL-NICOTINATE ESTERS

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

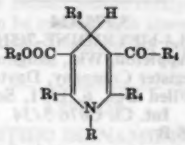
No Drawing. Filed Jan. 19, 1971, Ser. No. 107,849

Claims priority, application Germany, Jan. 24, 1970, P 20 03 146.3

Int. Cl. C07d *31/36, 31/46*

U.S. Cl. 260—294.9 **19 Claims**

1,4-dihydropyridines of the formula:



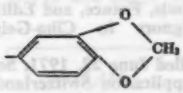
wherein

R is hydrogen, straight, branched or cyclic lower alkyl, lower alkenyl, or lower alkinyl, unsubstituted or substituted by hydroxyl or alkoxy of 1 to 3 carbon atoms; or benzyl, or phenethyl, unsubstituted or substituted in the aryl portion by 1 to 7 members selected from the group consisting of 1 to 3 alkoxy moieties of 1 to 3 carbon atoms, 1 or 2 alkyl moieties of 1 to 3 carbon atoms, and 1 or 2 halogen atoms;

R_1 is straight or branched chain alkyl of 1 to 4 carbon atoms;

R_2 is straight or branched chain alkyl of 1 to 6 carbon atoms, straight or branched chain dialkyl of 1 to 6 carbon atoms, straight or branched chain alkenyl of 2 6 carbon atoms, straight or branched chain alkinyl of 2 to 6 carbon atoms, cyclic alkyl of 3 to 6 carbon atoms, cyclic alkenyl of 3 to 6 carbon atoms, straight or branched chain alkyl or alkenyl of 2 to 6 carbon atoms interrupted by 1 or 2 oxygen atoms, straight or branched chain alkyl of 1 to 6 carbon atoms substituted by hydroxyl, or straight or branched chain alkenyl of 2 to 6 carbon atoms substituted by hydroxyl;

R_3 is aryl, unsubstituted or substituted by 1 to 3 members selected from the group consisting of 1 to 3 nitro moieties, 1 or 2 cyano moieties, 1 to 3 halogen atoms, 1 or 2 hydroxyl moieties, 1 or 2 acyloxy moieties of 1 or 2 carbon atoms in the acyl portion, 1 to 3 alkoxy moieties of 1 to 4 carbon atoms, a dioxymethylene moiety of the formula:



an alkylmercapto moiety of 1 to 4 carbon atoms in the alkyl portion, trifluoromethyl, carboxyl, carbalkoxy of 1 to 4 carbon atoms in the alkoxy portion and an alkylsulphonyl moiety of 1 to 4 carbon atoms in the alkyl portion; benzyl; styryl; pyridyl; pyrimidyl; furyl; thienyl; pyrrolyl; pyridyl, pyrrolyl, thienyl or furyl substituted by alkyl of 1 or 2 carbon atoms; or pyrimidyl substituted by at least one member selected from the group consisting of alkyl of 1 or 2 carbon atoms, 1 or 2 methoxy moieties and 1 or 2 ethoxy moieties; and

R_4 is straight or branched chain alkyl of 1 to 4 carbon atoms.

are useful for their coronary dilating effect, their nitrite-like effect on the heart, their anti-fibrillation effect, their vascular-spasmolytic effect and muscular-spasmolytic effect, and as anti-hypertensives.

3,775,423

PHTHALOCYANINE-TYPE DYESTUFFS

Bernard Lamure, Lyons, France, assignor to Societe Rhodiaceta, Paris, France

No Drawing. Continuation of abandoned application Ser. No. 811,585, Mar. 28, 1969. This application Sept. 17, 1971, Ser. No. 181,601
Claims priority, application France, Mar. 29, 1968, 146,472
Int. Cl. C07d 29/38
U.S. Cl. 260—295 A 8 Claims

The invention provides new phthalocyanine-dyestuffs derived at least in part from naphthylene or perylene dicarboxylic acid and containing ester groups, which can be used in colouring polyesters and polyamides.

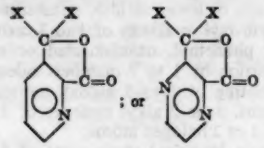
3,775,424

FURO[3,4-b]PYRIDINE-7(5H)-ONES

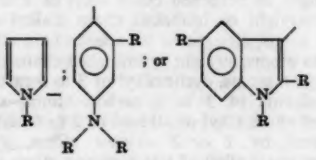
Sheldon Farber, Appleton, Wis., assignor to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,325
Int. Cl. C07d 5/34
U.S. Cl. 260—295 B 2 Claims

A novel chromogenic compound of normally colorless form is disclosed, having the structural formula:



wherein each X is



wherein each R is hydrogen, an alkyl radical having 1 to 4 carbon atoms, an alkoxy radical having 1 to 4 carbon atoms or a phenyl radical. These colorless, but colorable dyes are employed in pressure-sensitive record material and mark-forming manifold systems.

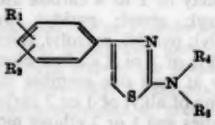
3,775,425

2-AMINO-4-PHENYL-THIAZOLES AND THEIR ADDITION SALTS

Rene Bosshard, Birsfelden, Switzerland, Jean-Claude Muller, Saint Louis, France, and Edith Ebert, Lorrach, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 22, 1971, Ser. No. 155,622
Claims priority, application Switzerland, June 23, 1970, 9,478/70
Int. Cl. C07d 91/34
U.S. Cl. 260—306.8 R 5 Claims

New 2-amino-4-phenyl-thiazoles and their addition salts of the formula



(I)

wherein

R_1 is halogen, lower alkyl or hydroxy
R_2 is hydrogen, halogen, lower alky, nitro, hydroxy or phenyl
R_3 is hydrogen or halogen
R_4 and
R_5 are lower alkyl

and process for their production are described. These thiazoles and their salts are excellent growth control agents for a great variety of plants. They can be used as herbicides, fertilizers, plant hormones as well as for increasing the sugar content in cane sugar.

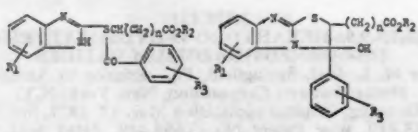
3,775,426

(BENZIMIDAZOL - 2 - YLTHIO)-BENZOYL-ALKYL CARBOXYLIC ACIDS AND THEIR ALKYL ESTERS

Peter H. L. Wei, Springfield, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Mar. 17, 1971, Ser. No. 125,378, now Patent No. 3,704,239. Divided and this application July 20, 1972, Ser. No. 273,570
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 6 Claims

Novel compounds of Formula I and Formula II have been prepared which have CNS depressant and antitubercular activity:



(I) (II)

wherein

R_1 is selected from the group consisting of hydrogen, halogen, (lower)alkyl, trifluoromethyl, nitro and amino;
R_2 is selected from the group consisting of hydrogen and (lower)alkyl;
R_3 is selected from the group consisting of hydrogen, halogen, (lower)alkyl, trifluoromethyl, nitro, amino, phenyl, halophenyl and (lower)alkylphenyl;
n is an integer of from 1 to about 3; and the pharmaceutically acceptable acid addition salts thereof.

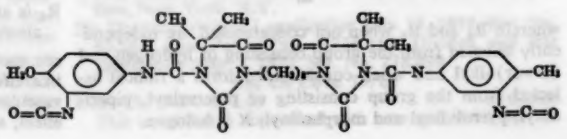
3,775,427

POLYISOCYANATES CONTAINING HYDANTOIN GROUPS

Juergen Habermeier, Pfeffingen, Basel-Land, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,496
Claims priority, application Switzerland, Oct. 6, 1970, 14,762/70
Int. Cl. C07d 49/32
U.S. Cl. 260—309.5 4 Claims

Polyisocyanates are manufactured by adding 2 mols of a polyisocyanate, such as isophoronediisocyanate or toluylene-2,4-diisocyanate, onto one mol of a bis-hydantoin, such as, for example, 1,6-bis(5',5'-dimethylhydantoinyl-3')-hexane. Example: The new diisocyanate of the formula



These compounds may be used to prepare polymers which are used as fibers, films, foams and adhesives.

3,775,428

POLY(THIOAMIDES)

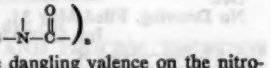
Aubert Yaucher Coran and Joseph Edward Kerwood, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 704,186, Sept. 20, 1967, which is a division of application Ser. No. 646,202, June 15, 1967, which is a continuation-in-part of application Ser. No. 579,493, Sept. 15, 1966, which is a continuation-in-part of application Ser. No. 549,730, May 12, 1966, which in turn is a continuation-in-part of application Ser. No. 459,466, May 27, 1965, all now abandoned. This application Feb. 8, 1971, Ser. No. 113,633

Int. Cl. C07d 27/52

U.S. Cl. 260—326 S **13 Claims**

New compounds with a nucleus of



where n is 2 to 4 and the dangling valence on the nitrogen is linked to a second carbonyl, alkyl, aryl, cycloalkyl, hydrogen, alkylene carbon or arylene carbon and R is alkylene, arylene, cycloalkylene, or residue from ester of mercapto lower fatty acid and polyhydric alcohol which compounds are inhibitors of premature vulcanization of diene rubbers. A combination of a vulcanization accelerator and an inhibitor of this invention is an improved rubber additive which allows longer and safer processing time for rubber.

3,775,429

PROCESS FOR PREPARING 3-INDOLYL ACETIC ACIDS

Meyer Sletzinger, North Plainfield, and John M. Chemerda and George Gal, Watchung, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 873,701, Nov. 3, 1969, which is a division of application Ser. No. 660,234, Aug. 14, 1967, now Patent No. 3,527,796, which in turn is a continuation-in-part of abandoned application Ser. No. 586,364, Oct. 13, 1966. This application Nov. 3, 1971, Ser. No. 195,471

Int. Cl. C07d 27/56

U.S. Cl. 260—326.13 A **4 Claims**

Process for preparing 1-aroyl-3-indolyl acetic acids by direct acylation of substituted phenylhydrazine sulfonates and subsequent condensation and cyclization with levulinic acid. Said products are useful as anti-inflammatory agents.

3,775,430

OCTALONE CARBOXYLIC ACIDS AND THEIR DERIVATIVES

Abraham Weber, Paris, and Jacques Jean Frossard, Champigny, France, assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Continuation of abandoned application Ser. No. 56,997, June 8, 1970, which is a division of application Ser. No. 389,489, Aug. 13, 1964, now Patent No. 3,532,742. This appplication Nov. 10, 1971, Ser. No. 197,486

Claims priority, application France, Sept. 26, 1963, 948,754

Int. Cl. C09d 27/52

U.S. Cl. 260—326 C **2 Claims**

This invention relates to 6,6-dimethyl-Δ^9-8-octalone carboxylic acids and derivatives thereof. The products are useful as pharmacological agents in view of their antibacterial, chlororetic activity, and ability to reduce blood cholesterol concentrations.

3,775,431

PYRROLIDONES FROM γ-BUTYROLACTONES USING A ZEOLITE CATALYST

Paul G. Rodewald, Jr., Rocky Hill, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,963

Int. Cl. C07d 27/08

U.S. Cl. 260—326.5 FL **7 Claims**

γ-Substituted-γ-butyrolactams are synthesized as new compositions of matter. These compounds are synthesized by reacting a substituted γ-lactone with ammonia or a primary amine at a temperature from about 200° C. to about 500° C. over certain zeolite catalysts. Additionally, γ-butyrolactone can be reacted with ammonia over zeolite catalysts in the above temperature range to produce γ-butyrolactam.

3,775,432

EPITHIO DIENAMIDES

John B. Siddall and Clive A. Henrick, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Original application Feb. 1, 1971, Ser. No. 111,674, now Patent No. 3,723,462, dated Mar. 27, 1973. Divided and this application Aug. 18, 1972, Ser. No. 281,669

Int. Cl. C07d 59/00

U.S. Cl. 260—327 E **7 Claims**

Novel epithio substituted hydrocarbon esters, derivatives thereof, and amides having diunsaturation, synthesis thereof, useful for the control of insects.

3,775,433

ANTIMICROBIAL METABOLITE S491β AND S491γ AND CHEMICAL DERIVATIVES

George Alfred Ellestad, Pearl River, N.Y., and William James McGahren, Demarest, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 4, 1972, Ser. No. 250,201

Int. Cl. C07c 5/32

U.S. Cl. 260—343.3 **6 Claims**

This disclosure describes two new compounds, designated S491β and S491γ, produced in a microbiological fermentation under controlled aerobic conditions using a strain of *Aspergillus chevalieri*. The compound S491β has antimicrobial activity whereas the compound S491γ has antiviral activity. This disclosure also describes certain derivatives of S491β and S491γ which possess antimicrobial activity.

3,775,434

PROCESS FOR PREPARING A 3,4,9,10-PERYLENE-TETRACARBOXYLIC ACID DIANHYDRIDE PIGMENT

Ernst Spietschka, Oberauroff, Taunus, and Josef Landler, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 20, 1971, Ser. No. 145,525

Claims priority, application Germany, May 23, 1970, P 20 25 289.5

Int. Cl. C07d 7/46

U.S. Cl. 260—345.2 **13 Claims**

Finishing process for improving the pigment properties of 3,4,9,10-perylene-tetracarboxylic acid dianhydride by precipitating the free acid thereof from an aqueous alkaline solution of a salt of the acid, heating the precipitated acid in an organic solvent at elevated temperature to form the dianhydride and isolating the dianhydride.

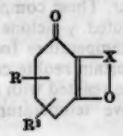
3,775,435

5,6,7,8-TETRAHYDRO-2,5 (AND 4,5)-DIOXO-1-BENZOPYRANS

John H. Sellstedt, King of Prussia, Stanley C. Bell, Penn Valley, and Ronald J. McCaully, Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

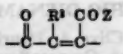
No Drawing. Filed Aug. 26, 1971, Ser. No. 175,409
Int. Cl. C07d *7/34*
U.S. Cl. 260—345.2 **6 Claims**

Compounds of the formula:



in which

X is the moiety



Z is a member selected from the group consisting of —OR⁴,

—Cl, —Br, and —OM;

R, R², R³, R⁴ and R⁵ are independently selected from the group consisting of —H, lower alkyl, phenyl and benzyl,

R⁶ is selected from the group consisting of —H, lower alky, phenyl, benzyl, lower dialkylaminoalkyl and cycloalkyl of 3 to 10 carbon atoms, and when taken with R⁵ and the nitrogen atom to which they are bonded forms the morpholino, piperidino and piperazino groups, and

M is selected from alkali metal cations and —NH_4,

are immuno-inflammatory agents possessing antiallergic and antiinflammatory activity. The compounds of this invention are also intermediates for the synthesis of known chromone and coumarin derivatives.

3,775,436

COLOR STABILIZATION OF MALEIC ANHYDRIDE

Raymond E. Stenseth, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,352
Int. Cl. C07c *57/14*
U.S. Cl. 260—346.8 **15 Claims**

Dicarboxylic acid anhydrides such as maleic anhydride are provided with improved color stability by a treating agent represented by the structure

$$R_m—Z—X_n$$

where R is alkyl of from 1 to 8 carbon atoms or phenyl, Z is selected from the group consisting of aluminum, germanium, lead, mercury, phosphorus, selenium, silicon, tin, titanium and zirconium, X is a halogen, *m* is an integer of from 1 to 4 and *n* is an integer of from 1 to 3.

3,775,437

1,3,3-TRIMETHYL-7-OXABICYCLO[4.1.0] HEPTANE-2,5-DIONE

Donald L. Roberts and Bonita P. Hege, Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

No Drawing. Filed Jan. 4, 1972, Ser. No. 215,427
Int. Cl. C07d *1/06, 1/00*
U.S. Cl. 260—348 C **1 Claim**

Synthesis of the new composition of matter, 1,3,3-trimethyl-7-oxabicyclo[4.1.0]heptane-2,5-dione.

3,775,438

EPOXIDATION OF HEXAFLUOROPROPYLENE

Robert John Cavanaugh, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 31, 1972, Ser. No. 258,360
Int. Cl. C07d *1/06*
U.S. Cl. 260—348.5 R **8 Claims**

A process for the epoxidation of hexafluoropropylene which comprises (a) activating a composition consisting essentially of silica by contacting it with a mixture of oxygen and hexafluoropropylene and/or hexafluoropropylene epoxide at from 175 to 400° C. and (b) contacting the activated composition with hexafluoropropylene and oxygen at from 140 to 280° C.

3,775,439

PROCESS FOR THE EPOXIDATION OF HEXAFLUOROPROPYLENE

George Milton Atkins, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 31, 1972, Ser. No. 258,363
Int. Cl. C07d *1/06*
U.S. Cl. 260—348.5 R **7 Claims**

In a process for the epoxidation of hexafluoropropylene which comprises (a) activating silica gel by contacting it with a member selected from the class consisting of a mixture of oxygen and hexafluoropropylene, hexafluoropropylene epoxide and mixtures thereof at from 175 to 400° C. and (b) contacting the activated silica gel with hexafluoropropylene and oxygen at from 140 to 280° C., the improvement which comprises

(1) contacting the silica gel with hydrochloric acid, and
(2) thereafter water washing the silica gel prior to step (a).

3,775,440

EPOXIDATION OF TETRAFLUOROETHYLENE AND CHLOROTRIFLUOROETHYLENE

Robert John Cavanaugh and George Milton Atkins, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 31, 1972, Ser. No. 258,451
Int. Cl. C07d *1/06*
U.S. Cl. 260—348.5 R **9 Claims**

A process for the epoxidation of tetrafluoroethylene or chlorotrifluoroethylene which comprises (a) activating a composition consisting essentially of silica by contacting it with oxygen and the tetrafluoroethylene or chlorotrifluoroethylene at from 190 to 300° C., and (b) thereafter contacting the activated composition with the tetrafluoroethylene or chlorotrifluoroethylene respectively, and oxygen at from —10 to 120° C.

3,775,441

DIURETHANES AND TRIURETHANES FOR CROSS-LINKING NATURAL AND SYNTHETIC RUBBER

Crispin Stuart Leworthy Baker, Stapleford, Douglas Barnard, Welwyn Garden City, and Maurice Read Porter, Aston, near Stevenage, England, assignors to The Natural Rubber Producers' Research Association, London, England

No Drawing. Continuation-in-part of application Ser. No. 862,507, Sept. 30, 1969, now Patent No. 3,645,980, dated Feb. 29, 1972. This application May 21, 1971, Ser. No. 145,882
Claims priority, application Great Britain, Oct. 4, 1968, 47,289/68
Int. Cl. C07c *125/06*
U.S. Cl. 260—390 **3 Claims**

Paranitrosophenols, optionally carrying lower alkyl substituents, are reacted, in the oxime form, with organic di- or tri-isocyanates to give novel compounds having the general formula

$$R\{NH—CO—O—N=Q=O)_m$$

where *m* is 2 or 3, Q is a para-quinonoid ring and R is for example an aliphatic hydrocarbon group. These products are employed as superior crosslinking agents for natural and synthetic rubbers.

3,775,442
PROCESS FOR THE MANUFACTURE OF A TRIARYLMETHANE COMPOUND
Nigel Hughes, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed July 29, 1971, Ser. No. 167,439
Claims priority, application Great Britain, Aug. 27, 1970, 41,242/70
Int. Cl. C09b *11/10*
U.S. Cl. 260—391 **3 Claims**

A process for the manufacture of a triaminotriarylmethane comprising reacting a diaminobenzhydrol such as Michler's hydrol with an optionally substituted aromatic secondary or tertiary amine in the presence of phosphoric acid.

3,775,443
17-ACETYLGONANES AND PROCESS THEREFOR
Reinhardt P. Stein, Audubon, Herchel Smith, Bryn Mawr, and Robert C. Smith, Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 857,557, Sept. 12, 1969, which is a continuation-in-part of application Ser. No. 748,594, July 30, 1968, both now abandoned. This application Mar. 1, 1972, Ser. No. 230,933
Int. Cl. C07c *169/10*
U.S. Cl. 260—397.4 **37 Claims**

Compounds of the 17-acetylgonane series, and D-homo analogs thereof, preferably substituted at C–13 with polycarbonalkyl, and at C–16 with (lower)alkyl, optionally substituted at C–17 with hydroxy, alkanoyloxy or formyloxy; or optionally unsaturated at C_{16}–C_{17} (I) are hormonally-active and valuable intermediates for hormonally-active steroids. Compounds (I) of the gon-4-en-3-one series, substituted at C–16 by alkyl, optionally substituted at C–6 by halogen or methyl and optionally unsaturated at –C_6–C_7– (Ia) are progestationally and anti-estrogenically active. Compounds (I) of the gona-1,3,5(10)-triene series, substituted at C–16 by alkyl (Ic) are estrogenically and anti-lipemically active.

The 17-acetylgon-16-enes, optionally substituted at C_{16} with (lower)alkyl (Ia) and the 17α-acetylgonan-17β-ol, formates or alkanoates (Ie) are provided by hydrating the corresponding 17-ethynylgon-16-enes (IIa) or 17α-ethynylgonan-17β-ol, formates or alkanoates (IIb). Compounds (IIa) and (IIb) are provided, respectively, by (i) dehydrating or (ii) acylating the corresponding 17α-ethynylgonan-17β-ols. Reaction of (Id) with diazoalkanes provides 16α,17α-azo(lower)alkylene compounds (XI), which on decomposition by heating produce 17-acetyl-16- alkylgon-16-enes (II). Reduction of (II) provides the 17-acetyl-16β-alkyl series (In). Reaction of (Id) with alkyl Grignard reagents provides the 17-acetyl-16α-alkyl series (VIII).

Compounds (Id) of the gon-4-en-3-one series are converted by reduction to hormonally-active, especially progestationally, anti-estrogenically, and anti-androgenically active compounds of the 17-acetylgon-4-en-3-one series, e.g., progesterone. Means are provided to obtain progestationally active compounds of the 16-unsubstituted-gon-4-ene series comprising reducing or cleaving $\Delta^{1,3,4(10)}$. Compounds (Ii) or (Ij) followed by Birch reduction in the A-ring and oxidation. Means also are described for providing the new gon-4-en-3-one compounds of this invention substituted at C–16 by alkyl (Ia) comprising converting an aromatic A-ring to a Δ^4-3-one; introduction of methyl or halogen at C_6, introduction or unsaturation at –C_6–C_7– and introduction of hydroxy and alkanoyloxy at C_{17}.

3,775,444
4-AMINO, 3- OR 3'-FLUORO-4'-UREIDO DIPHENYL SULFONES
Norman P. Jensen, Watchung, and Janos Kollonitsch and Tsung-Ying Shen, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed July 13, 1971, Ser. No. 162,306
Int. Cl. C07c *147/00*
U.S. Cl. 260—397.6 **2 Claims**

4 - amino - 3' - fluoro-4'-ureido diphenyl sulfone or 4-amino - 3-fluoro-4'-ureido diphenyl sulfone is provided having anti-Marek's disease activity.

3,775,445
SURFACE ACTIVE AGENTS
Stephen E. McGuire and Oliver C. Kerfoot, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Jan. 14, 1972, Ser. No. 217,943
Int. Cl. C07c *143/90*
U.S. Cl. 260—402 **6 Claims**

Novel surface active agents are provided having the general formula:

wherein R is a linear alkyl group containing from about 2 to 30 carbon atoms, R' is a linear alkyl group containing from about 1 to 30 carbon atoms, the sum of R plus R' being at least 9, and M is a cation selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, NH_4 and substituted ammonium.

3,775,446
ACYL-AMINO-PROPYL-DIALKYLAMMONIUM DIALKYL PHOSPHATES
Arno Wegerhoff, Worth am Main, Franz-Josef Schmitz, Erlenbach, and Carl Macura, Klingenberg, Germany, assignors to Glanzstoff AG, Wuppertal, Germany
No Drawing. Original application Feb. 17, 1969, Ser. No. 799,999, now Patent No. 3,634,117. Divided and this application Dec. 16, 1970, Ser. No. 98,896
Claims priority, application Germany, Feb. 17, 1968, P 17 19 543.6
Int. Cl. C07f *9/02*; D06m *13/26*
U.S. Cl. 260—403 **8 Claims**

Acyl-amino-propyl - dialkylammonium dialkyl phosphates as surface active agents and their application to textile materials, especially polyester and polyamide fibrous materials, as a finishing agent, for example, in combination with an aqueous emulsion of a textile lubricating agent.

3,775,447
LIGNITE PRODUCTS AND COMPOSITIONS THEREOF
Robert S. Andrews, Jr., Houston, Tex., and William C. McDaniels, Hobbs, N. Mex., assignors to National Lead Company, New York, N.Y.
No Drawing. Application Jan. 15, 1970, Ser. No. 3,216, now Patent No. 3,671,427, dated June 20, 1972, which is a continuation-in-part of application Ser. No. 539,312, Apr. 1, 1966, now Patent No. 3,494,865, dated Feb. 10, 1970. Divided and this application June 6, 1972, Ser. No. 260,340
Int. Cl. E21b *3/00*
U.S. Cl. 260—404.5 **11 Claims**

Reaction products of humic acid with long-chain fatty acyl partial amides of a polyalkylene polyamine, such as the reaction product obtained using tall oil fatty acids and tetraethylene pentamine, the salt linkage being optionally, partially or largely converted to amide linkage

by heat treatment. The humic acid optionally may be in part reacted with a long-chain alkyl ammonium cation. The novel products are useful in compounding oil base well-working fluids; as corrosion inhibitors; and for other uses.

3,775,448

GEL-FORMING MONOGLYCERIDES OF CYCLIC CARBOXYLIC ACIDS

Gisela Guhr, Johannes Donatus von Mikusch-Buchberg, Wolfgang Heinrich, and Arnold Bandzauner, Hamburg, Germany, and Yves Tollard d'Audiffret, Neuilly-sur-Seine, France, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,495
Claims priority, application Luxembourg, Oct. 30, 1970, 61,972
Int. Cl. C11c *3/00*; C07c *69/64*; A61k *7/00*
U.S. Cl. 260—410.7 **5 Claims**

The invention relates to monoglycerides of cyclic fatty acids having the general formula

$$H(CH_2)_y \cdot P \cdot (CH_2)_x \cdot CO \cdot O \cdot C_3H_5(OH)_2$$

where P is a six-membered carbocyclic group and x and y have whole values from 0 to 19 provided that $x+y$ is from 7 to 19. The monoglycerides, on addition to water form firm stable clear gels which are suitable for incorporation into cosmetic and toilet preparations. Typical examples of toilet preparations to which the monoglycerides and gels thereof can impart useful properties are skin cream, sun-screen preparations and deodorant compositions which can be made extremely water-repellant by means of the invention.

3,775,449

SEPARATION OF MONO- AND DI-NEO ACIDS

Bertram Yeomans, Hessle, England, assignor to BP Chemicals Limited, London, England

No Drawing. Filed Apr. 22, 1971, Ser. No. 136,609
Claims priority, application Great Britain, Apr. 28, 1970, 20,318/70
Int. Cl. C07c *51/42, 51/48*
U.S. Cl. 260—419 **9 Claims**

Separation of di-neo acids from admixture with mono-neo acids by adding to the mixture, dissolved in strong acid, an amount of water to give a molar ratio of water and formic acid (where present) to strong acid of 0.5:1 to 1:1 to liberate the mono acid, and adding further amounts of water to increase the aforesaid ratio to 1.3:1 to 3:1 to liberate the diacid.

3,775,450

PROCESS FOR PURIFICATION OF CARBOXYLIC ACIDS

Paul H. Washecheck, Ponca City, Okla., Owen Portwood, Jr., Janesville, Wis., and Charles M. Starks, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,587
Int. Cl. C09f *5/10*
U.S. Cl. 260—419 **6 Claims**

Hydrogenation of carboxylic acids produced by nitric acid oxidation prior to distillation improves overall acid quality.

3,775,451

ORGANOTIN THIOCARBOXYLATES AND PREPARATION THEREOF

Lawrence Brecker, Brooklyn, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Original application May 20, 1969, Ser. No. 826,299, now Patent No. 3,630,992. Divided and this application Feb. 11, 1971, Ser. No. 114,715
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **18 Claims**

A process is provided for preparing diorganotin monothiocarboxylates and such diorganotin monothiocarboxylates containing additional groups, including diorganotin monohalide monothiocarboxylates, by reacting a diorganotin sulfide with an acyl halide to form a diorganotin monohalide monothiocarboxylate, and optionally further reacting the diorganotin monohalide monothiocarboxylate with an active hydrogen compound such as (a) a strong inorganic acid to liberate the corresponding free thiol acid; or (b) with a weak organic acid, such as a mercaptan, mercaptoester, thiol acid, or carboxylic acid, or carboxylic acid ester or (c) an alcohol to form a diorganotin monomercaptide monothiocarboxylate, a diorganotin monomercapto acid ester monothiocarboxylate, a diorganotin dithiocarboxylate, a diorganotin monocarboxylate monothiocarboxylate, or a diorganotin monoalcoholate monothiocarboxylate.

Diorganotin monohalide monothiocarboxylates and diorganotin monomercapto acid ester monothiocarboxylates are also provided.

3,775,452

PLATINUM COMPLEXES OF UNSATURATED SILOXANES AND PLATINUM CONTAINING ORGANOPOLYSILOXANES

Bruce D. Karstedt, Scotia, N.Y., assignor to General Electric Company

No Drawing. Continuation of application Ser. No. 861,199, Sept. 25, 1969, which is a continuation of application Ser. No. 598,216, Dec. 1, 1966, both now abandoned. This application Apr. 28, 1971, Ser. No. 138,273
Int. Cl. C07f *15/00*; C08g *31/02*
U.S. Cl. 260—429 R **7 Claims**

Platinum complexes of unsaturated siloxanes are provided which are useful as hydrosilation catalysts. These platinum-siloxane complexes can contain an average of up to about one halogen atom, per gram atom of platinum, which include platinum-siloxane complexes which are substantially free of inorganic halogen. These platinum-siloxane complexes can be made by effecting contact between a platinum halide and an unsaturated siloxane, for example 1,3-divinyltetramethyldisiloxane, and removing available inorganic halogen from the resulting material. In addition, curable organopolysiloxane compositions are provided comprising an organo-polysiloxane polymer and an effective amount of such platinum-siloxane complex.

3,775,453

PREPARATION OF HEXAFLUOROISOPROPOXIDES OF ALUMINUM AND GROUP IV ELEMENTS

Khodabakhsh S. Mazdiyasni, Xenia, Barbara J. Schaper, Enon, and Leanne M. Brown, Brookville, Ohio; said Schaper and said Brown assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Mar. 14, 1972, Ser. No. 234,674
Int. Cl. C07f *7/00, 7/28, 5/06*
U.S. Cl. 260—429 R **5 Claims**

Hexafluoroisopropoxides of aluminum, silicon, germanium, titanate, zirconium and hafnium are prepared by reacting the chloride of one of the foregoing elements with sodium or potassium hexafluoroisopropoxide in the presence of hexafluoro-2-propanol. The fluoro-substituted compounds obtained are useful as catalysts in polymerization reactions and in the preparation of high purity oxides by thermal or hydrolytic decomposition of the compound. The compounds can also be used in the preparation of high temperature polymers, fluids and lubricants.

3,775,454

PREPARATION OF ORGANOLEAD-SILICON COMPOUNDS

Kenneth C. Williams and Shirl E. Cook, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of application Ser. No. 848,358, Aug. 7, 1969, now Patent No. 3,644,450, dated Oct. 3, 1967. This application June 4, 1971, Ser. No. 150,226

Int. Cl. C07f 7/24

U.S. Cl. 260—437 R 9 Claims

A method of making alkyl lead-silicon compounds and derivatives thereof, wherein an organoleadmagnesium halide is prepared from a Grignard reagent (RMgX, wherein R is an organic radical and X a halogen) and a lead halide or lead carboxylate and then reacted with an organic silicon halide to form the alkyl lead-silicon compound, and such alkyl lead-silicon compounds.

3,775,455

SOLID, WATER-SOLUBLE TRANS-ACID COMPLEXES WITH CHROMIUM (III) NITRATE

Charles Carmen Cumbo, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,759

Int. Cl. C07f 11/00; B32b 17/06

U.S. Cl. 260—438.5 R 10 Claims

Solid, water-soluble complexes of certain trans-acids with chromium (III) nitrate are prepared by dispersing solutions of these complexes in tetrahydrofuran or an alcohol having 2–4 carbon atoms in a diluent liquid selected from chlorinated, aliphatic hydrocarbons having 1–4 carbon atoms, aromatic hydrocarbons having 6–8 carbon atoms, and ethers having 4–8 carbon atoms. The solid complexes obtained by this process are excellent coupling agents for thermoplastic resin composites containing glass fibers.

3,775,456

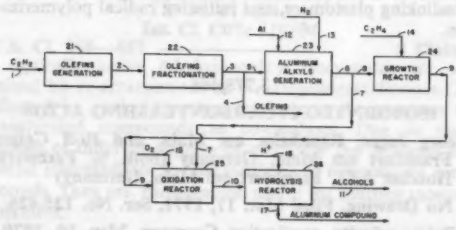
CONTROL OF DISTRIBUTION OF ALUMINUM ALKYLS AND PRODUCTS DERIVED THEREFROM

Jerry A. Acciarri and Eugene F. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 4, 1969, Ser. No. 847,091

Int. Cl. C07f 5/06

U.S. Cl. 260—448 A 14 Claims



A process for producing aluminum trialkyls of controlled alkyl chain lengths is disclosed. Ethylene is polymerized to 1-olefins which are separated into 1-olefins of selected chain lengths. The separated 1-olefins are reacted with aluminum and hydrogen to produce the aluminum trialkyls which can be subsequently grown with ethylene to increase chain lengths. The trialkyls can then be oxidized and hydrolyzed to produce primary alcohols.

3,775,457

METHOD OF MANUFACTURING ALKOXYSILANES

Hisashi Muraoka, Yokohama, Masafumi Asano, Kawasaki, Taizo Ohashi, Kanagawa-ken, and Hiromi Yoshida, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku, Kawasaki-shi, Japan

Filed Sept. 26, 1972, Ser. No. 292,395

Claims priority, application Japan, Sept. 30, 1971, 46/75,792

Int. Cl. C07f 7/04, 7/06

U.S. Cl. 260—448.8 R 10 Claims

A method of manufacturing alkoxysilanes which comprises holding a cuprous chloride catalyst and finely divided silicon in a suspended state in a synthetic oil containing multicyclic aromatic hydrocarbons consisting of two to four rings which collectively include one to four alkyl groups each having less than four carbon atoms, adding a material represented by a chemical formula ROH (where R denotes an alkyl group having less than four carbon atoms) to said suspension at a temperature of 100 to 300° C. for reaction with silicon, thereby obtaining alkoxysilanes expressed by a general formula $H_nSi(OR)_{4-n}$ (where n is an integer of 0 to 3).

3,775,458

SUBSTITUTED PHENYLETHYL SULFITES

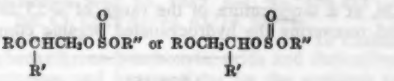
Rupert A. Covey, Wolcott, Allen E. Smith, Bethany, and Winchester L. Hubbard, Woodbridge, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Nov. 1, 1967, Ser. No. 685,226

Int. Cl. C07c 137/00

U.S. Cl. 260—456 R 6 Claims

This invention relates to new compositions of matter having the formulas:



where R' is aromatic and R and R'' are aromatic or aliphatic. These compositions are useful for controlling mites.

3,775,459

CYANO CARBOXYLIC COMPOUND MANUFACTURE FROM HYDROCARBYL CYANIDE

Edwin L. Patmore, Fishkill, and William R. Siegart and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

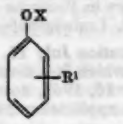
No Drawing. Original application Dec. 18, 1968, Ser. No. 784,901, now Patent No. 3,595,907, dated July 27, 1971. Divided and this application Feb. 3, 1971, Ser. No. 119,432

The portion of the term of the patent subsequent to Apr. 25, 1989, has been disclaimed

Int. Cl. C07c 121/02, 121/40, 121/52

U.S. Cl. 260—465 D 5 Claims

Mehod of carboxylating a compound of the group of R—C≡CH, RCH_2CN, indene, cyclopentadiene or fluorene, where R is hydrocarbyl, comprising contacting said compound with carbon dioxide under substantially anhydrous conditions in the presence of a base of the formula:



where X is sodium or potassium, R^1 is hydrogen or alkyl and subsequently acidifying the resultant reaction product to form the carboxylated product.

3,775,460

L-3-AMINO-4'-CYANOSUCCINANILIC ACID

Milton Lapidus, Rosemont, and Marian M. McGettigan, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Oct. 16, 1970, Ser. No. 81,533, now Patent No. 3,725,453. Divided and this application Aug. 7, 1972, Ser. No. 278,516

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 D 1 Claim

Disclosed herein are derivatives of L-aspartic acid which have utility as artificial sweetener agents. Also disclosed is a method for producing such derivatives.

3,775,461

HYDROCYANATION OF OLEFINS

William Charles Drinkard, Jr., Wilmington, Del., and Brian W. Taylor, Pittsburgh, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 771,313, Oct. 28, 1968, now Patent No. 3,579,560, which is a continuation-in-part of abandoned application Ser. No. 680,969, Nov. 6, 1967. This application Feb. 1, 1971, Ser. No. 111,617

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.3 21 Claims

A process for hydrocyanating an olefinically unsaturated organic compound having 2 to 20 carbon atoms by reacting the unsaturated organic compound with hydrogen cyanide in the presence of a compound such as $(Z_3P)_3CoX$, where Z is R or OR, R is an alkyl or aryl group having up to 18 carbon atoms and X is halide or CN, at a temperature in the range of —25 to 200° C. and recovering the hydrocyanated organic compound.

3,775,462

RACEMIC PGE_2

Udo F. Axen, Comstock Township, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 30,312, Apr. 20, 1970. This application Feb. 2, 1971, Ser. No. 112,032

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D 11 Claims

This invention is racemic PGE_2, racemic $PGF_{2\alpha}$, racemic $PGF_{2\beta}$, racemic PGA_2, PGB_2 (d-, l-, and racemic forms thereof), analogs of PGE_2, $PGF_{2\alpha}$, $PGF_{2\beta}$, PGA_2, and PGB_2 in the d-, l-, and racemic forms, and processes for making them. These compounds are useful for a variety of pharmacological purposes, including anti-ulcer, inhibition of platelet aggregation, increase of nasal patency, labor inducement at terms, and wound healing.

3,775,463

N-PHENYL-N'-ALKOXY ESTER UREAS

Adolf Fischer, Mutterstadt, Pfalz, Karl-Heinz Koenig, Ludwigshafen (Rhine), Gustav Steinbrunn, Schwegenheim, Pfalz, and Albrecht Zschocke, Bad Duerkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Application July 13, 1970, Ser. No. 54,657, now abandoned, which is a division of application Ser. No. 652,034, July 10, 1967, now Patent No. 3,621,055. Divided and this application May 16, 1972, Ser. No. 253,786

Int. Cl. C07c *127/18*

U.S. Cl. 260—471 A 4 Claims

N-phenyl-N'-alkoxy ester urea compounds having herbicidal properties.

3,775,464

PROCESS FOR PREPARING 2-DIALKYLAMINOETHYL 4-ALKOXY-3-AMINOBENZOATES

Giorgio Pifferi, Milan, Italy, assignor to I.S.F. S.p.A., Milan, Italy

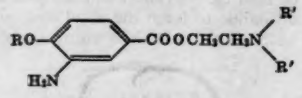
No Drawing. Filed Aug. 10, 1970, Ser. No. 62,716

Claims priority, application Italy, Apr. 22, 1970, 23,712/70

Int. Cl. C07c *101/54*

U.S. Cl. 260—472 7 Claims

2-dialkylaminoethyl 4-alkoxy-3-aminobenzoates, of the general formula:



are prepared by a new and simpler process which comprises alkoxylating a 4-halo-3-nitrobenzoic acid with an alkali metal alkoxide in an aprotic solvent, esterifying and reducing the ester by conventional means.

3,775,465

ORGANIC TETRAPEROXIDES

Egeo Sacrini and Claudio Cavallotti, Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

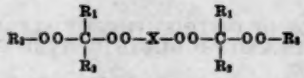
No Drawing. Filed Aug. 7, 1970, Ser. No. 62,128

Claims priority, application Italy, Aug. 12, 1969, 20,839/69

Int. Cl. C07c *73/00*

U.S. Cl. 260—475 SC 3 Claims

Tetraperoxides of the formula



where X is a bivalent radical such as alkylene; R_1 is hydrogen or an organic radical; R_2 is alkylene alkoxy carbonyl; and R_3 is an organic radical. Method of preparing tetraperoxides by addition reaction between a bis-hydroperoxide and a carbonyl compound to form a dihydroxy diperoxide, followed by condensation of the dihydroxy diperoxide with a tertiary monohydroxide. The tetraperoxides are useful for vulcanizing saturated elastomers, crosslinking plastomers, and initiating radical polymerization.

3,775,466

ISOBORNYLOXYCARBONYLAMINO ACIDS

Georg Jager, Raunheim am Main, and Rolf Geiger, Frankfurt am Main, Germany (both % Farbwerke Hoechst A.G., Frankfurt am Main, Germany)

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,426

Claims priority, application Germany, Mar. 19, 1970, P 20 13 033.0; Feb. 4, 1971, P 21 05 150.3

Int. Cl. C07c *133/10, 125/04*

U.S. Cl. 260—482 B 4 Claims

Isobornyloxycarbonylamino acids and derivatives thereof, particularly N^{α}-benzyloxycarbonyl-N^{G},N^{G}-bis-(isobornyloxycarbonyl)arginine, N^{G},N^{G}-bis-(isobornyloxycarbonyl)-arginine, and N^{α},N^{G},N^{G}-tris-(isobornyloxycarbonyl)-arginine, useful as intermediates in the synthesis of peptides, prepared by reacting an amino acid or derivatives thereof either with isobornyloxycarbonyl chloride or with an isobornyloxycarbonyl active ester.

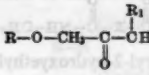
3,775,467

PROCESS FOR THE PRODUCTION OF ALKOXY ACETOACETIC ACID ESTERS

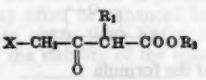
Erich Greth, Visp, Switzerland, assignor to Lonza Ltd., Gampel, Valais, Basel, Switzerland

No Drawing. Filed Aug. 31, 1972, Ser. No. 285,368
Claims priority, application Switzerland, Sept. 10, 1971, 13,277/71; Apr. 21, 1972, 5,916/72
Int. Cl. C07c 67/00
U.S. Cl. 260—483 16 Claims

This invention involves a process of preparing γ-alkoxy-acetoacetic acid esters, having the formula:



wherein R is a lower alkyl group having 1 to 10 carbon atoms, R_1 is a hydrogen atom or a lower alkyl group having 1 to 10 carbon atoms, and R_2 is a lower alkyl group having 1 to 10 carbon atoms. The process includes reacting a γ-halo-acetoacetic acid ester having the formula:



wherein R_1 and R_2 are as defined above, and X is a halogen atom, with an alkali alcoholate, having the formula:

ROG or $(RO)_2G$

where R is defined as above, and G is an alkali moiety. The alkali alcoholate has first been dissolved in an alcohol. The molar ratio of the alkali alcoholate to the γ-halo-acetoacetic acid ester is at least 2. The reaction can be conducted in the presence of an aprotic solvent, such as, dimethyl sulfoxide.

3,775,468

OPTICALLY ACTIVE β-HALOGENOALKYL ISOCYANATES

Klaus-Dieter Kampe, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 873,654, Nov. 3, 1969. This application May 5, 1970, Ser. No. 34,887
Claims priority, application Germany, Nov. 7, 1968, P 18 07 494.7
Int. Cl. C07c 119/04
U.S. Cl. 260—487 3 Claims

Optically active β-halogenoalkyl isocyanates are obtained by re-arrangement of N-halogenoazetidinones-(2) effected by radical-forming catalysts in the presence of unsaturated compounds as co-catalysts. Due to their groups of different degrees of reactivity the products are useful intermediates for the synthesis of heterocyclic compounds. They are, furthermore, useful for splitting racemic mixtures.

3,775,469

PREPARATION OF UNSATURATED ESTERS

Herbert A. Jung, Brussels, Belgium, assignor to Esso Research and Engineering Company

No Drawing. Filed June 14, 1972, Ser. No. 262,532
Int. Cl. C07c 67/04
U.S. Cl. 260—497 A 17 Claims

Unsaturated esters are prepared through the reaction of a C_4–C_8 aliphatic conjugated diolefin with a carboxylic acid in the presence of a palladium catalyst and a ligand modifier comprising organic phosphine or phosphite materials and a promoter compound such as sodium borohydride or acetic anhydride. The reaction is carried out in the absence of tertiary amines and in the substantial absence of oxygen. The unsaturated esters produced are useful intermediates which can be hydrogenated and then hydrolyzed to yield plasticizer alcohols.

3,775,470

PROCESS FOR THE PREPARATION OF ORGANOPHOSPHONYL DICHLORIDES

Calvin Vogel, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed July 7, 1971, Ser. No. 160,540
Int. Cl. C07f 9/42
U.S. Cl. 260—502.4 R 14 Claims

Process for the preparation of organophosphonyl dichlorides is provided comprising reacting an organophosphonyl ester having the structural formula:

wherein each R can independently be an alkyl or aryl radical, and PCl_5 in the presence of a catalyst comprising LiX wherein X is a halogen radical, and recovering the corresponding organophosphonyl dichloride.

3,775,471

NOVEL PHENANTHRENE-2-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

John A. Edwards, Los Altos, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of application Ser. No. 638,648, May 15, 1967, now Patent No. 3,657,329. This application Sept. 25, 1967, Ser. No. 670,421
Int. Cl. C07c 63/44, 65/14, 69/76
U.S. Cl. 260—514.5 10 Claims

Novel phenanthrene-2-carboxylic acids and derivatives thereof, processes and intermediates for the synthesis of cis and trans racemates of said phenanthrene-2-carboxylic acids having estrogenic activity.

3,775,472

OXIDATION OF ALKYL AROMATIC COMPOUNDS

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,055
Int. Cl. C07c 63/06, 63/14, 63/32
U.S. Cl. 260—524 R 9 Claims

Alkyl aromatic compounds, and particularly alkyl aromatic hydrocarbons, are oxidized by treating with an oxygen-containing gas in the presence of a catalyst comprising a ruthenium-containing compound to form oxygenated aromatic compounds.

3,775,473

METHOD FOR THE OXIDATION OF ARYL METHYL GROUPS TO CARBOXYLIC ACID GROUPS

Norbert J. Mruk, Plum Boro, Pa., assignor to Koppers Company, Inc.

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,720
Int. Cl. C07c 63/06
U.S. Cl. 260—524 M 6 Claims

A method in which oxidation resistant aryl methyl groups can be oxidized to a carboxylic acid group involving the steps of mixing sulfuric acid, vanadium pentoxide or manganese dioxide with a methyl substituted benzene. Heating the mixture to a temperature not greater than about 150° C. and simultaneously agitating the mixture until the aryl methyl group has oxidized to a carboxylic acid group and separating the acid thus formed.

3,775,474
PROCESS FOR THE PREPARATION OF ACRYLIC ACID

Takashi Ohara, Nishinomiya, Michikazu Ninomiya, Kobe, Isao Yanagisawa, Ikeda, and Masahiro Wada, Nishinomiya, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

No Drawing. Filed Apr. 20, 1972, Ser. No. 245,758
Claims priority, application Japan, Apr. 27, 1971, 46/27,203
Int. Cl. C07c *51/26, 57/04*
U.S. Cl. 260—530 N 4 Claims

A process for the preparation of acrylic acid comprising catalytically oxidizing acrolein in the vapor phase with molecular oxygen in the presence of a catalytic oxide in which the atomic ratio of the constitutional metal elements is within the following range:

$$V_aMo_bW_cCr_dCu_e$$

where $14<a\leqq24$, $b=12$, $4\leqq c<20$, $1\leqq d<10$ and

$$0\leqq e<12$$

3,775,475
TELOMER PRODUCTS

Roy T. Holm, Orinda, Rupert C. Morris, Berkeley, and James W. Hayden, Richmond, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,376
Int. Cl. C07c *59/12*
U.S. Cl. 260—535 P 8 Claims

Novel linear telomers of C_4 ethylenically unsaturated dicarboxylic acids or derivatives thereof are produced by telomerizing a C_4 ethylenically unsaturated dicarboxylic acid or derivative thereof with certain alkyl ester or alkylene carbonate reactant in the presence of a free-radical catalyst. The telomers are converted by saponification with alkali metal or ammonium hydroxide solutions to substantially biodegradable, water-soluble polycarboxylate salts terminated with an hydroxy-substituted alkyl end group. The compounds are used as detergent builders.

3,775,476
AROMATIC ACID CHLORIDE PROCESS

Christian S. Rondestvedt, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of application Ser. No. 875,542, Nov. 10, 1969. This application Nov. 15, 1972, Ser. No. 306,749
Int. Cl. C07c *51/58, 63/02, 63/22*
U.S. Cl. 260—544 M 13 Claims

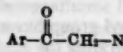
Process for preparing aromatic acid chlorides such as isophthaloyl chloride and terephthaloyl chloride, useful as intermediates for making polyester, polyamide and the like condensation polymers, which includes contacting an aromatic compound containing at least one trichloromethyl group bonded to an aromatic carbon atom with sulfur dioxide in the presence of antimony pentachloride or aluminum chloride as catalyst at a temperature and pressure and for a time sufficient to convert at least one trichloromethyl group to an acid chloride group.

3,775,477
N,N'-BIS[2-ARYL-2-(HYDROXY OR OXO)-ETHYL]-BRIDGED-BIS-CARBOXAMIDES

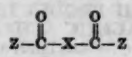
Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,095
Int. Cl. C07c *103/38, 103/42*
U.S. Cl. 260—558 A 19 Claims

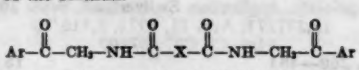
Condensation of an amine of the formula



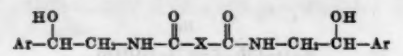
and a diacid dihalide of the formula



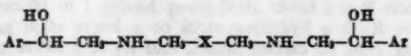
provides N,N' - bis[2-aryl-2-oxoethyl]-bridged-biscarboxamides of the formula



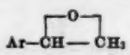
reduction of which provides N,N'-bis[2-aryl-2-hydroxyethyl]-bridged-biscarboxamides of the formula



and N,N'-bridged-bis[2-aryl-2-hydroxyethylamines] of the formula



The latter compounds are also prepared by condensation of an epoxide of the formula



with a diamine of the formula

$$NH_2—CH_2—X—CH_2—NH_2$$

The products have antibacterial activity in vitro and are useful as antibacterial agents.

3,775,478
SUBSTITUTED PHENYLTHIOAMIDINES

Earl R. Bockstahler, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 30, 1972, Ser. No. 257,940
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R 3 Claims

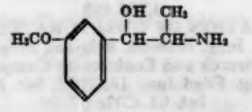
Substituted phenylthioamide compounds such as 2-(4-chlorophenylthio)acetamidine; 2-(4 - chlorophenylthio)-acetamidoxime; and their pharmaceutically-acceptable salts are prepared by the reaction of a substituted phenylthioacetonitrile with hydroxylamine hydrochloride or with methanol followed by ammonium chloride. The compounds have antimicrobial activity and also inhibit ADP-induced aggregation of blood platelets.

3,775,479
AMINE COMPOUNDS

Hans Bruderer, Riehen, and Rudolf Rüegg, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application June 17, 1968, Ser. No. 737,287, which is a continuation-in-part of abandoned application Ser. No. 686,759, Nov. 29, 1967. Divided and this application Aug. 2, 1971, Ser. No. 169,562
Claims priority, application Switzerland, Dec. 23, 1966, 18,487/66; May 10, 1968, 7,014/68
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 A 1 Claim

Compounds of the formula



which is present at least partially in (-)-erythro configuration, processes for their preparation and novel intermediates useful therein are disclosed. Said products of Formula I have useful hypertensive activity.

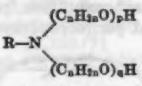
3,775,480

REACTION PRODUCTS OF HALOGENS AND ALKOXYLATED PRIMARY AMINES

Alan Geoffrey Scruton Glasby, Oxted, England, assignor to Glasby Pharmaceuticals Limited, Westerham, England

No Drawing. Filed July 23, 1970, Ser. No. 57,795
Claims priority, application Great Britain, July 23, 1969, 37,033/69, 37,034/69, 37,035/69
Int. Cl. C07c *93/04*
U.S. Cl. 260—584 B 7 Claims

A disinfectant composition is made by reacting a halogen with an amine of the formula



where R is a monovalent hydrocarbon radical with up to 18 carbon atoms or a hydroxyalkyl radical with from 2 to 18 carbon atoms, *n* is 2, 3 or 4 and the total of *p* plus *q* is not less than 2 nor more than 5.

The amount of halogen used may be 0.8 to 1 atom equivalent per mole equivalent of amine and an excellent, stable, germicide and fungicide is produced. The fungicidal qualities may often be enhanced by increasing the amount of halogen above these limits, but this may be at the expense of the stability of the material.

3,775,481

OXIDATION OF HYDRINDANTIN

Alan E. Pierce, 3316 Brookview Road, Rockford, Ill. 61107

No Drawing. Filed May 3, 1971, Ser. No. 139,851
Int. Cl. C07c *49/82*
U.S. Cl. 260—590 9 Claims

Ninhydrin is prepared by a process which involves oxidizing hydrindantin using chlorine, bromine, or a combination of chlorine and bromine. The oxidation reaction proceeds at a commercially feasible rate and in a manner such that undesirable side products such as noxious oxides are not formed. In addition, by using the illustrated process, Ninhydrin can be recovered in good yields.

3,775,482

PREPARATION OF TERTIARY PHOSPHINES

Warren Hewertson and Ian Charles Taylor, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of abandoned application Ser. No. 92,193, Nov. 23, 1970. This application May 22, 1972, Ser. No. 255,708
Claims priority, application Great Britain, Nov. 24, 1969, 57,393/69; Aug. 14, 1970, 39,278/70
Int. Cl. C07f *9/50*
U.S. Cl. 260—606.5 P 12 Claims

Process for the preparation of alkali metal organic phosphides, which are useful as intermediates in the preparation of tertiary phosphines. Preferably the intermediate phosphide is not isolated from the reaction mixture, which is further treated, in situ, with an appropriate organic halide to produce the required tertiary phosphine.

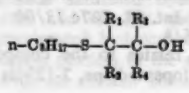
3,775,483

PROCESS FOR PRODUCING A MONO-CONDENSATION PRODUCT OF AN ALKYLENE OXIDE AND A MERCAPTAN

Stanley W. Frederickson and Ralph E. Watson, Borger, Tex., assignors to Phillips Petroleum Company

Filed Nov. 9, 1970, Ser. No. 87,867
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 R 6 Claims

A two-stage reaction of alkylene oxide and a mercaptan to form mono-condensates of the formula



where R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, n-butyl, isobutyl, and tert-butyl radicals and the total number of carbon atoms in R_1, R_2, R_3 and R_4 does not exceed 4, is carried out wherein said alkylene oxide is contacted with a stoichiometric excess of said mercaptan in a first reaction step to produce a reaction mixture comprised of said condensate and residual mercaptan. The reaction mixture is contacted with additional alkylene oxide in a second reaction step to react with the residual mercaptan and produce additional condensate product.

3,775,484

PROCESS FOR PREPARING METAL SALTS OF DITHIOLBUTANEDIOLS

Joseph P. Ciaudelli, Ramsey, N.J., assignor to Avon Products, Inc.

No Drawing. Continuation-in-part of application Ser. No. 124,529 Mar. 15, 1971. This application July 21, 1972, Ser. No. 273,796
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 R 10 Claims

The method of making a metal salt of a 1,4-dithiol-2,3-butanediol comprising first forming said diol by reacting butane dioxide with hydrogen sulfide in a C_3–C_5 alkanol solvent therefor in the presence of a catalyst, adding to the reaction mass after the diol is formed a water-soluble metal compound capable of reacting with said diol to form a salt insoluble in said solvent, and separating the precipitated 1,4-dithiol-2,3-butanediol salt formed.

3,775,485

PRODUCTION OF HYDROXYARYL THIOETHERS

Kurt H. Pilgram, Modesto, Calif., Dirk Medema, Amsterdam, Netherlands, and Samuel B. Soloway and George W. Gaertner, Jr., Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Original application Sept. 14, 1970, Ser. No. 72,163, now Patent No. 3,732,317. Divided and this application Feb. 8, 1973, Ser. No. 330,832
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F 3 Claims

Hydroxyaryl thioethers are prepared by first preparing a phenyl sulfonium bisulfate—either directly by reacting a phenol with dimethyl sulfoxide in sulfuric acid or stepwise by reacting an organic sulfide with chlorine in sulfuric acid to form a chloro-sulfonium bisulfate and reacting this crude reaction mixture with a phenol—then reacting the crude reaction mixture containing the phenyl sulfonium bisulfate with water containing halide ions to effect formation of the thioether. Nitration of the intermediate phenyl sulfonium bisulfate thus prepared can be effected using nitric acid and optionally additional sulfuric acid without the isolating of any intermediate products. Novel intermediates are also prepared via this method.

3,775,486

1,7-DIHYDROXY BENZ[e]INDANES

Leland J. Chinn, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed June 1, 1972, Ser. No. 258,536
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 R 3 Claims

1,7 - dihydroxybenz[e]indane derivatives herein described exhibit anti-inflammatory activity. These substances can be prepared in several steps from [3-(6-hydroxy-2-naphthyl)]-2,2-dialkylalkanoic acid derivatives.

3,775,487

PROCESS FOR PREPARING PHENOL

Bernard Isbitsky, Jr., Garfield, Jack M. Solomon, West Caldwell, and Bernard R. Bluestein, Glen Rock, N.J., assignors to Witco Chemical Company, Inc., New York, N.Y.

No Drawing. Filed June 6, 1968, Ser. No. 734,880
Int. Cl. C07c 37/06
U.S. Cl. 260—621 H 5 Claims

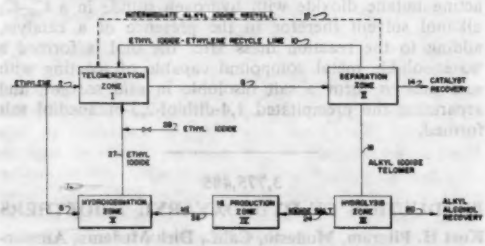
Process of preparing phenol from cyclohexanol or cyclohexanone, or mixtures thereof, by passing the same, in the vapor phase at atmospheric pressure, over a heated nickel oxide-copper oxide catalyst.

3,775,488

n-ALKYL ALCOHOL PRODUCTION

Eugene F. Magoon, Walnut Creek, and Lynn H. Slaugh, Lafayette, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed June 11, 1969, Ser. No. 832,216
The portion of the term of the patent subsequent to July 13, 1988, has been disclaimed
Int. Cl. C07c 31/02, 139/10
U.S. Cl. 260—640 1 Claim



Ethylene is converted to primary n-alkyl alcohols by (1) telomerizing ethylene and ethyl iodide to primary n-alkyl iodides, (2) separating and hydrolyzing the alkyl iodides with an aqueous alkaline solution to produce primary n-alkyl alcohols and an iodide salt, (3) converting the iodide salt to hydrogen iodide and (4) hydroiodinating ethylene with the hydrogen iodide to produce ethyl iodide for recycle to provide the ethyl iodide for telomerization with ethylene.

3,775,489

PROCESS FOR FLUORINATION OF AROMATIC AND POLYNUCLEAR HYDROCARBON COMPOUNDS AND FLUOROCARBONS PRODUCED THEREBY

John L. Margrave, 5012 Tangle Lane, Houston, Tex. 77027, and Richard J. Lagow, Massachusetts Institute of Technology, Department of Chemistry, Room 4-455, Cambridge, Mass. 02139

Continuation-in-part of abandoned application Ser. No. 718,128, Apr. 2, 1968. This application Apr. 14, 1971, Ser. No. 133,803
Int. Cl. C07c 17/00, 19/00, 21/00
U.S. Cl. 260—648 F 19 Claims

A process for the direct fluorination of cyclic hydrocarbon compounds, and the production of new perfluoroperhydro derivatives thereof. The cyclic hydrocarbon compound is first placed in a reaction chamber and fluorine gas or an inorganic fluoride gas is introduced into the atmosphere surrounding said compound at a slow rate such that the initial concentration of the fluorinating gas is a mere trace and such concentration is less than 6% at the end of thirty minutes of fluorination. The introduction of the fluorinating gas is then continued at a slow rate to gradually increase the concentration thereof in said atmosphere until the concentration of the fluorinating gas is about 100%. The fluorination process is preferably conducted at atmospheric pressure and room temperature; however, higher temperatures up to the decomposition temperature of the material may be used and in order to increase the amount of fluorination, pressures above atmospheric may be used after a preliminary atmospheric fluorination. New perfluoroperhydro derivatives of cyclic hydrocarbons which have been produced by using this process include perfluoroperhydronaphthacene, perfluoroperhydropentacene, perhydroovalene, perfluoroperhydro - 9,10 - benzaphenanthrene, perfluoroperhydro-1,2-benzanthracene, and perfluoroperhydro-1,3,6,8-tetraphenylpyrene.

3,775,490

PREPARATION OF PENTAHALOBENZENES FROM TETRAHALOBENZENES

William W. Prichard, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,466
Int. Cl. C07c 25/02, 25/04
U.S. Cl. 260—650 R 6 Claims

Described is a process for producing a compound $C_6HCl_2X_3$, where X is chlorine or fluorine, e.g., pentachlorobenzene, by reacting a compound of the formula $C_6H_2ClX_3$, e.g., any of the tetrachlorobenzene isomers, with phospene or chlorine plus carbon monoxide.

3,775,491

PROCESSES FOR PRODUCING POLYCHLORINATED ETHANES AND POLYCHLORINATED ETHYLENES

Mareo Takenobu, Tokorozawa-shi, Takashi Yoshida, Iruma-gun, Saitama-ken, Hiroshi Masuda and Kenya Takahashi, Tokyo, and Kenji Fujioka, Kansuke Miura, Masuo Shibasaki, and Tetsuo Yamamoto, Iruma-gun, Saitama-ken, Japan, assignors to Central Glass Co., Ltd., Ube-shi, Yamaguchi-ken, Japan

Filed Aug. 23, 1968, Ser. No. 754,929
Claims priority, application Japan, Aug. 30, 1967, 42/55,263
Int. Cl. C07c 17/00, 21/10, 21/12
U.S. Cl. 260—654 D 22 Claims

Process for producing polychlorinated ethanes containing at least three chlorine atoms in the molecule or polychlorinated ethylenes at least two chlorine atoms in the molecule which comprises the continuous reaction steps of producing polychlorinated ethanes containing at least three chlorine atoms in the molecule by contacting chlorine with 1,2-dichloroethane in the presence of chlorinated ethylenes containing at least one chlorine atom, pyrolyzing the resultant mixture, and adding hydrogen chloride to the pyrolyzed mixture either as it is or after separation of trichloroethylene and tetrachloroethylene therefrom; the intended polychlorinated ethanes or ethylenes being recovered at one of these three steps.

3,775,492

2-SUBSTITUTED-3-METHYLCYCLOPENTADIENES

Richard Wightman Kierstead, North Caldwell, and Ronald Andrew Le Mahieu, Bloomfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application May 9, 1969, Ser. No. 823,498, now Patent No. 3,715,400, which is a division of application Ser. No. 706,657, Feb. 19, 1968, now Patent No. 3,484,489, which in turn is a continuation-in-part of abandoned application Ser. No. 649,441, June 26, 1967. Divided and this application Aug. 11, 1972, Ser. No. 279,910
Int. Cl. C07c 13/08
U.S. Cl. 260—666 A 5 Claims

This invention relates to the compounds 2-(2'-butenyl)-3-methyl cyclopentadiene, 2-(2'-cis butenyl)-3-meth-

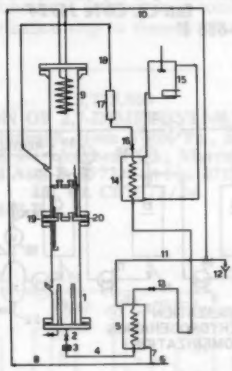
yl cyclopentadiene, 2-(2'-propenyl)-3-methyl cyclopentadiene, and 2-(2'-propynyl)-3-methyl cyclopentadiene. These novel compounds are intermediates for pyrethrin insecticides.

3,775,493

METHOD FOR INHIBITING THE POLYMERIZATION OF CONJUGATED DIENES

Renato De Simone, Como, Alessandro Béranger, San Donato Milanese, and Antonietta Scaramucci, Milan, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Mar. 3, 1972, Ser. No. 231,534
Claims priority, application Italy, Mar. 3, 1971, 21,250/71
Int. Cl. C07c 7/00
U.S. Cl. 260—666.5 9 Claims



There is provided a method for preventing the polymerization of conjugated dienes during separation from product streams, the method comprising adding inhibiting quantities of halogen derivatives of quinones to the solvent used to extract the conjugated diene from its product stream.

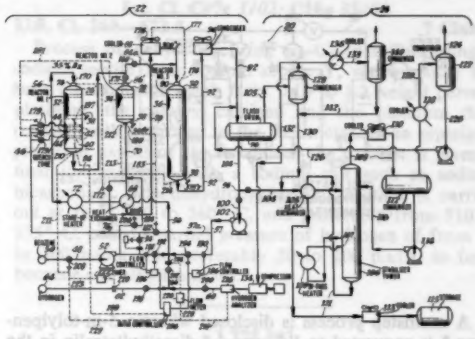
3,775,494

REACTIVITY CONTROL IN PETROCHEMICAL AND REFINERY PROCESSES

Norman L. Carr, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation of application Ser. No. 885,066, Dec. 15, 1969, now Patent No. 3,654,131. This application Nov. 26, 1971, Ser. No. 202,454
The portion of the term of the patent subsequent to Apr. 4, 1989, has been disclaimed
Int. Cl. C07c 5/10; C10g 23/00
U.S. Cl. 260—667 25 Claims

A method for controlling a hydrogenation plant to avoid localized reactor hot spots and to avoid reactor run-away and catalyst deterioration caused thereby is disclosed for such plant including a reactor and catalyst system for producing a saturated hydrocarbon from a corresponding unsaturated hydrocarbon. The method comprises the steps of supplying gaseous hydrogen and liquid unsaturated hydrocarbon for the reactor and catalyst system, supplying a recycle portion of a product of said system including such saturated hydrocarbon for the inlet of said reactor and catalyst system, supplying at least the liquid unsaturated hydrocarbon and any liquid portion of said recycle portion to the system in heat exchange relation with an effluent stream of the system, heat exchanging the unsaturated hydrocarbon and the recycle portion prior to inletting into the reactor system and controlling the flow rate thereof into said reactor system so that the temperature of all materials entering the system including the recycle portion is above the dew point of the mixture comprising the total reactor



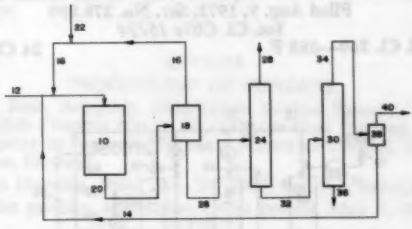
fluid, and controlling the temperatures of these materials including the recycle portion throughout every portion of the reactor and catalyst system so that the temperatures remain continually above the dew points of all of the materials and that all materials entering the system are maintained entirely in their gaseous phase uniformly throughout the system.

3,775,495

HYDROCARBON CONVERSION

Henri Robert Debus, Meise, Marcel Van Tongelen, Diegem, and Raymond M. Cahen, Pierre, Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed May 10, 1972, Ser. No. 251,864
Claims priority, application France, July 13, 1971, 7125592
Int. Cl. C07c 5/18
U.S. Cl. 260—668 D 9 Claims



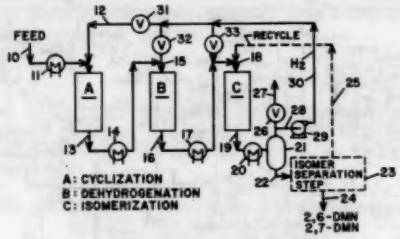
Polyalkylbenzenes having the same number of carbon atoms as the feed consisting of gem structured polyalkylcyclohexanes are produced with an acidic, difunctional dehydrogenation-isomerization catalyst in a reaction zone maintained at a temperature in the range of from 200 to 600° C. and a pressure no greater than 750 p.s.i. A preferred process includes the production of durene from gem-tetromethylcyclohexanes.

3,775,496

PREPARATION OF 2,6-DIMETHYLNAPHTHALENE AND 2,7-DIMETHYLNAPHTHALENE

Sheldon L. Thompson, Glen Mills, Pa., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Filed Aug. 9, 1972, Ser. No. 278,898
Int. Cl. C07c 15/24
U.S. Cl. 260—668 F 27 Claims



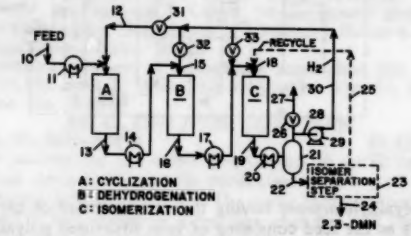
A multistep process is disclosed wherein 5-m-tolylpentene-2 is converted to 1,6- and 1,8-dimethyltetralin in the presence of a solid acidic catalyst at 200–450° C. and preferably also recycled hydrogen, vapors from this conversion are reacted by contact at 300–500° C. in a hydrogen atmosphere with a solid dehydrogenation catalyst, preferably platinum on non-acidic alumina, to form 1,6- and 1,8-dimethylnaphthalenes and hydrogen, vapors from the dehydrogenation reaction are contacted at 275–500° C. with a solid acidic isomerization catalyst to form 2,6- and 2,7 - dimethylnaphthalenes in admixture with other isomers, the 2,6- and 2,7-dimethylnaphthalenes are recovered from the isomerization product, e.g. by crystallization, and part of the generated hydrogen is recycled in the system. The process can be varied in several ways, including the utilization of a liquid acidic catalyst in either the first step or the isomerization step, and also subsequent to the dehydrogenation step by individually recovering the 1,6- and 1,8-dimethylnaphthalene isomers and separately isomerizing each isomer to form the 2,6- and 2,7-isomers respectively.

3,775,497

PREPARATION OF 2,3-DIMETHYLNAPHTHALENE

Sheldon L. Thompson, Glen Mills, Pa., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Filed Aug. 9, 1972, Ser. No. 278,899
Int. Cl. C07c 15/24
U.S. Cl. 260—668 F 24 Claims



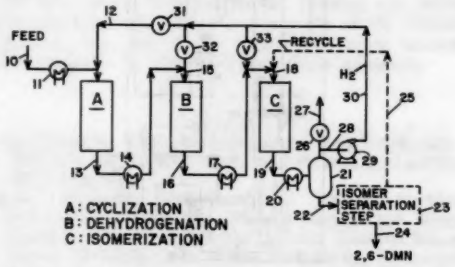
A multistep process is disclosed wherein 5-phenylhexene-2 is converted to 1,4-dimethyltetralin in the presence of a solid acidic catalyst at 200–450° C. and preferably also recycled hydrogen, vapors from this conversion are reacted by contact at 300–500° C. in a hydrogen atmosphere with a solid dehydrogenation catalyst, preferably platinum on non-acidic alumina, to form 1,4-dimethylnaphthalene and hydrogen, vapors from the dehydrogenation reaction are contacted at 275–500° C. with a solid acidic isomerization catalyst to form 2,3-dimethylnaphthalene in admixture with 1,3-dimethylnaphthalene, 2,3-dimethylnaphthalene is recovered from the isomerization product, e.g. by crystallization, and part of the generated hydrogen is recycled in the system. The process can be varied in several ways, including the utilization of a liquid acidic catalyst in either the first step or the isomerization step.

3,775,498

PREPARATION OF 2,6-DIMETHYLNAPHTHALENE

Sheldon L. Thompson, Glen Mills, Pa., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Filed June 9, 1972, Ser. No. 263,731
Int. Cl. C07c 15/24
U.S. Cl. 260—668 F 26 Claims



A multistep process is disclosed wherein 5-o-tolylpentene-2 is converted to 1,5-dimethyltetralin in the presence of a solid acidic catalyst at 200–450° C. and preferably also recycled hydrogen, vapors from this conversion are reacted by contact at 300–500° C. in a hydrogen atomsphere with a solid dehydrogenation catalyst, preferably platinum on non-acidic alumina, to form 1,5-dimethylnaphthalene and hydrogen, vapors from the dehydrogenation reaction are contacted at 275–500° C. with a solid acidic isomerization catalyst to form 2,6-dimethylnaphthalene in admixture with mainly 1,6-dimethylnaphthalene and a small proportion of the 1,5-isomer, 2,6-dimethylnaphthalene is recovered from the isomerization product, e.g. by crystallization, and part of the generated hydrogen is recycled in the system. The process can be varied in several ways, including the utilization of a liquid acidic catalyst in either the first step or the isomerization step.

3,775,499

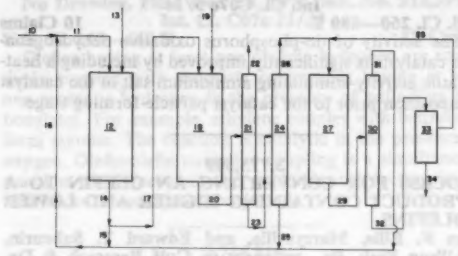
HYDROCARBON CONVERSION

Henri Robert Debus, Meise, Marcel Van Tongelen, Diegem, and Raymond M. Cahen, Woluwe St. Pierre, Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed May 10, 1972, Ser. No. 251,930
Claims priority, application France, July 13, 1971, 7125590
Int. Cl. C07c 5/24
U.S. Cl. 260—668 A 14 Claims

A process for the production of polymethylbenzenes from alkyl aromatic hydrocarbons having at least one alkyl radical with more than one carbon atom, said process comprising hydrogenating said alkyl aromatic hydrocarbons into the corresponding alkylcycloalkanes,

isomerizing said alkylcycloalkanes in the presence of Friedel Crafts catalyst to provide polymethylcyclohexanes isomers of said alkylcycloalkanes and then subjecting said



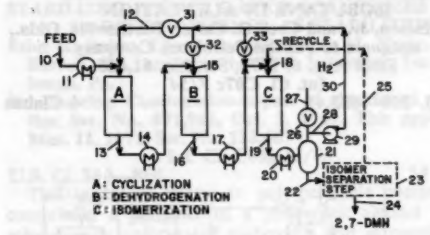
polymethylcyclohexanes isomers to a combined dehydrogenation-isomerization step to thereby obtain polymethylbenzenes.

3,775,500

PREPARATION OF 2,7-DIMETHYLNAPHTHALENE

Sheldon L. Thompson, Glen Mills, Pa., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Filed Aug. 9, 1972, Ser. No. 278,897
Int. Cl. C07c *15/24*
U.S. Cl. 260—668 F 24 Claims



A multistep process is disclosed wherein 5-p-tolylpentene-2 is converted to 1,7-dimethyltetralin in the presence of a solid acidic catalyst at 200–450° C. and preferably also recycled hydrogen, vapors from this conversion are reacted by contact at 300–500° C. in a hydrogen atmosphere with a solid dehydrogenation catalyst, preferably platinum on non-acidic alumina, to form 1,7-dimethylnaphthalene and hydrogen, vapors from the dehydrogenation reaction are contacted with 275–500° C. with a solid acidic isomerization catalyst to form 2,7-dimethylnaphthalene in admixture with 1,7-dimethylnaphthalene, 2,7-dimethylnaphthalene is recovered from the isomerization product, e.g. by crystallization, and part of the generated hydrogen is recycled in the system. The process can be varied in several ways, including the utilization of a liquid acidic catalyst in either the first step or the isomerization step.

3,775,501

PREPARATION OF AROMATICS OVER ZEOLITE CATALYSTS

Warren W. Kaeding, Westfield, and Stephen A. Butter, East Windsor, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed June 5, 1972, Ser. No. 259,626
Int. Cl. C07c *5/26, 5/27*
U.S. Cl. 260—673 24 Claims

There is an increase in the yield of aromatics when air is fed with a hydrocarbon feed to a catalyst bed containing a crystalline aluminosilicate catalyst of the ZSM–5 type.

3,775,502

DEHYDROCYCLIZATION OF PARAFFINS

Masayoshi Oishi, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed May 8, 1972, Ser. No 250,991
Int. Cl. C07c *3/02*; C10g *35/08*
U.S. Cl. 260—673.5 7 Claims

Process of dehydrocyclizing C_6–C_{10} paraffins using a sodium zeolite X or sodium zeolite Y, which zeolite has been ion exchanged with from 0.10 to 1.2 weight percent platinum, the catalyst calcined and the platinum then reduced with hydrogen to the free metal. In an especially preferred aspect of the invention, the catalyst is given a final ion exchange with a sodium salt such as sodium bicarbonate. The dehydrocyclization reaction is carried out at from 500 to 560° C. and preferably from 510 to 555° C. using a partial pressure of hydrogen of from 10 to 300 p.s.i.g. and preferably 50 to 200 p.s.i.g. to form benzene and alkylbenzenes.

3,775,503

BRANCHED HYDROCARBONS IN THE C_{16}–C_{40} RANGE HAVING MAXIMALLY CROWDED GEMINAL METHYL GROUPS

Gary L. Driscoll, Boothwyn, Irl N. Duling, West Chester, and David S. Gates, Swarthmore, Pa., and Robert W. Warren, Pitman, N.J., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed July 6, 1970, Ser. No. 52,300
Int. Cl. C07c *9/00*
U.S. Cl. 260—676 9 Claims

Novel individual hydrocarbon species, useful as chemical intermediates or as components of traction fluids, can be obtained from the mixture of hydrocarbon fluids obtained from thermally cracking high molecular weight polyisobutylene. Other novel hydrocarbons are obtained by hydrogenation of the novel olefins. The unique character of these olefin and paraffin hydrocarbons can be proved by a combination of gas chromatography and nuclear magnetic resonance spectroscopy (NMR). This discovery involved the preparation and characterization of a homologous series, C_{11} to C_{40}, of sixteen branched hydrocarbon species consisting of repeating isobutylene structures and proves that these hydrocarbons are unique species which are characterized by "crowded" and sterically hindered geminal methyl and isolated methylene groups.

3,775,504

PRODUCTION OF BENZENE

Roy John Sampson, Christopher Buxton Spencer, and Satish Chandra Nirula, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,436
Claims priority, application Great Britain, May 7, 1971, 13,719/71
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 R 14 Claims

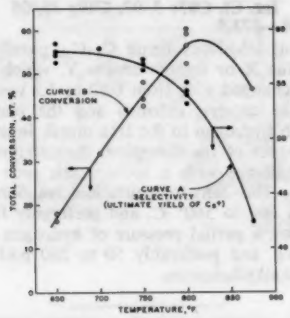
Alkyl aromatic hydrocarbons, for example, toluene, are dealkylated to yield benzene and hydrogen in the presence of steam and, optionally, hydrogen over a Group VIII noble metal catalyst supported on alpha-alumina. The hydrogen generated is used to supply at least part of the hydrogen requirement for a hydrodealkylation process, optionally carried out simultaneously with the steam dealkylation process in a common reactor.

3,775,505

SATURATED HYDROCARBON DISPROPORTIONATION AT LOW TEMPERATURES

Thomas R. Hughes, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 16, 1970, Ser. No. 3,303
Int. Cl. C07c 3/00, 9/00
U.S. Cl. 260—676 **7 Claims**



A process for disproportionation of saturated hydrocarbons which comprises contacting the saturated hydrocarbons at a temperature below 800° F., and in the presence of no more than 5 weight percent olefin, with a catalytic mass having catalytic activity for dehydrogenation as well as catalytic activity for olefin disproportionation.

3,775,506

METHOD OF PREPARING A HYDROGENATION CATALYST

William L. Houston, Jr., and William C. Clark, Sweeny, Tex., assignors to Phillips Petroleum Company

No Drawing. Continuation of abandoned application Ser. No. 886,409, Dec. 18, 1969. This application June 7, 1971, Ser. No. 150,817
Int. Cl. C07c 5/02, 5/10; C10g 23/02
U.S. Cl. 260—677 H **7 Claims**

A method of preparing a hydrogenation catalyst, comprising: pressurizing the catalyst at ambient temperature with a nonreactive gas to hydrogenation pressure and then increasing the temperature to hydrogenation conditions.

3,775,507

PROCESS FOR REMOVING CARBON DIOXIDE FROM ACETYLENE

Gerd Duembgen, Dannstadt, and Rolf Platz, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,652
Claims priority, application Germany, Apr. 5, 1971, P 21 16 557.1
Int. Cl. C07c 11/24
U.S. Cl. 260—679 A **5 Claims**

A process for removing residual amounts of carbon dioxide from pure acetylene (which has been obtained by thermal cracking of hydrocarbons after a main washing of the cracked gas with diethanolamine for removal of the major portion of CO_2 and separation of the other components of the cracked gas) which comprises first giving the pure acetylene a preliminary wash with the regenerated diethanolamine solution from the main CO_2 wash, then further washing it with a fresh diethanolamine solution serving to replenish the wash solution of the main CO_2 wash, combining the two wash solutions and resupplying them to the main CO_2 wash cycle.

3,775,508

TIN-PHOSPHORUS CATALYZED OXIDATIVE DEHYDROGENATION

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 16, 1971, Ser. No. 134,880
Int. Cl. C07c 5/18
U.S. Cl. 260—680 E **10 Claims**

The activity of tin-phosphorus oxidative dehydrogenation catalysts is significantly improved by including a heat-volatile activity-stimulating ammonium salt in the catalyst composition prior to the catalyst particle-forming stage.

3,775,509

PROCESS FOR CONVERTING AN OLEFIN TO A PRODUCT CONTAINING HIGHER AND LOWER OLEFINS

Alan F. Ellis, Murrysville, and Edward T. Sabourin, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,233
Int. Cl. C07c 3/62
U.S. Cl. 260—683 D **10 Claims**

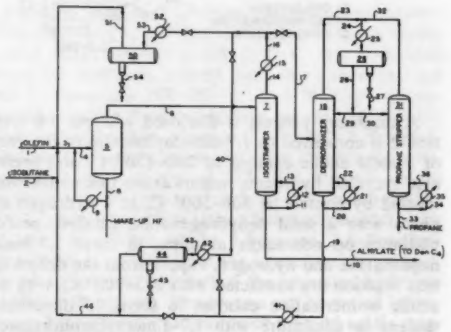
A process for converting, by metathesis, a monoolefin having from 14 to 28 carbon atoms, particularly an alpha olefin having from 14 to 28 carbon atoms, to a product containing a mixture of olefins of higher and lower carbon number than the olefin charge, which involves contacting the olefin charge with a novel composition containing alumina, molybdenum or rhenium and silver or copper.

3,775,510

REFRIGERATING COOLED RECYCLED ISOBUTANE IN ALKYLATION

Tom Hutson, Jr., and Cecil O. Carter, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Aug. 6, 1970, Ser. No. 61,665
Int. Cl. C07c 3/54
U.S. Cl. 260—683.41 **4 Claims**



At least a portion of recycle isoparaffin, e.g., isobutane is treated in an alkylation operation, e.g., isoparaffin-olefin alkylation to remove substantially the hydrogen fluoride therefrom and is then returned to the alkylation operation. In one embodiment hydrocarbon phase from HF settler is charged to a fractionation from which alkylate is removed as bottom, an overhead is split into at least two streams, a stream containing some propane to avoid propane buildup and another stream from which HF is removed as by refrigeration whereupon the latter stream containing a substantially reduced HF is recycled to alkylation.

3,775,511

OLEFIN ARYLATION AND OLEFIN COUPLING IN THE PRESENCE OF PALLADIUM CARBOXYLATES

Robert S. Shue, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,399
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 R 12 Claims

Olefins having at least one olefinic hydrogen are oxidatively coupled with aromatic compounds having at least one aromatic hydrogen in the presence of palladium carboxylates. For example, ethylene couples with benzene to form styrene. The reaction is catalytic in the presence of oxygen. Olefin-olefin oxidative coupling is a simultaneous reaction which becomes the predominant reaction in the absence of an aromatic compound.

3,775,512

POLYMER CROSS-LINKING USING SYSTEM CONTAINING N-METHYLOL AMIDE GROUPS AND AN ACIDIC SULFAMATE COMPOUND

Raymond Lanthier, Pierrefonds, Quebec, Canada, assignor to Gulf Oil Canada Limited, Toronto, Ontario, Canada

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,826
Int. Cl. C08g *9/20*
U.S. Cl. 260—851 11 Claims

Cross-linking of polymer is disclosed using a cross-linkable system containing N-methylolamide groups and as catalyst at acidic pH a water-soluble compound containing a sulfamate group.

3,775,513

STABILIZED UNSATURATED POLYESTERS WITH 2,4-DINITROPHENOL AS STABILIZER

John G. Baker, Cheswick, and Oliver M. Yerty, Lower Burrell, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 671,961, Oct. 2, 1967. This application Mar. 11, 1971, Ser. No. 123,463
Int. Cl. C08g *51/60*
U.S. Cl. 260—864 14 Claims

This invention relates to polymerizable compositions comprising a polyester of a polyhydric alcohol and an ethylenically unsaturated carboxylic acid in combination with a copolymerizable monomer, and especially alpha-methyl styrene, which are stabilized with 2,4-dinitrophenol, alone, or in combination with quinones or hydroquinones. These stabilized compositions display improved uncatalyzed storage stability, as well as improved catalyzed tank life stability, yet cure at conventional temperatures with little effect on the curing rate due to the presence of the stabilizer.

3,775,514

PVC BLENDED WITH CROSS-LINKED GRAFT COPOLYMER OF STYRENE AND METHYL METHACRYLATE ONTO A BUTADIENE POLYMER

Yasuo Amagi, Masaki Ohya, Zenya Shiiki, and Haruhiko Yusa, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Application Nov. 14, 1969, Ser. No. 876,920, now Patent No. 3,671,610, which is a continuation-in-part of abandoned application Ser. No. 570,261, Aug. 4, 1966. Divided and this application Nov. 24, 1971, Ser. No. 201,978
Claims priority, application Japan, Aug. 9, 1965, 40/48,036; Feb. 5, 1966, 41/6,652, 41/6,653
Int. Cl. C08d *9/10*
U.S. Cl. 260—876 R 1 Claim

Butadiene-styrene-methylmethacrylate copolymers prepared by graft-polymerization with cross-linked butadiene or polybutadiene-styrene copolymer latex of styrene-methylmethacrylate monomers and a cross-linking agent capable of copolymerizing with said monomers in two steps. Polyvinyl chloride resins incorporated with the graft-copolymer exhibits improved mechanical strength and other physical properties.

3,775,515

BLOCK COPOLYMERS AND A METHOD FOR PRODUCING THE SAME

Tadashi Yamaguchi, Sendai-shi, and Tomio Goto, Shiogama-shi, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 835,755, June 23, 1969. This application Apr. 26, 1971, Ser. No. 137,663
Claims priority, application Japan, July 16, 1968, 43/49,668
Int. Cl. C08f *15/18, 15/36, 15/40*
U.S. Cl. 260—879 4 Claims

Novel block copolymer, block copolymers having two or more polymer chains, each of which consists of the repetition of anionically polymerized monomer unit which is selected from two kinds or more of the anionically polymerizable monomers, and which is initiated by the compounds obtained by metallizing the functional groups of the compounds having two kinds or more of metallizable functional groups and method for producing the same.

3,775,516

FLAME RETARDANT POLYMER COMPOSITIONS CONTAINING PERCHLOROFULVALENE

Raymond R. Hindersinn, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 762,146, Sept. 24, 1968, now Patent No. 3,717,608, which is a continuation-in-part of abandoned application Ser. No. 597,890, Nov. 30, 1966, which in turn is a continuation-in-part of application Ser. No. 184,671, Apr. 3, 1962, now Patent No. 3,475,502. This application Sept. 20, 1971, Ser. No. 182,177
Int. Cl. C08g *45/58, 51/58*
U.S. Cl. 260—880 R 10 Claims

Polymeric uses of perchlorofulvalene include homopolymers of the compound and polymer compositions containing the compound as an additive.

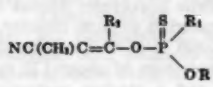
3,775,517

1-PHENYL-2-CYANO-2-METHYLVINYL-THIONO-PHOSPHORIC(PHOSPHONIC) ACID ESTERS

Hans-Jochem Riebel, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Günter Unterstenhöfer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,562
Claims priority, application Germany, Oct. 9, 1970, P 20 49 695.1
Int. Cl. A01n *9/36;* C07f *9/40*
U.S. Cl. 260—940 7 Claims

1 - phenyl - 2 - cyano-2-methylvinyl-thionophosphoric (phosphonic) acid esters of the general formula



(I)

in which

R is an alkyl radical with 1 to 6 carbon atoms,

R_1 is an alkyl or alkoxy radical with 1 to 6 carbon atoms or a phenyl radical, and

R_2 is a phenyl radical optionally substituted by at least one halogen, nitro, lower alkyl, alkoxy or alkylmercapto radical,

which possess insecticidal and acaricidal properties.

3,775,518

MOLDING NITRILE RESIN COMPOSITIONS

Ryuichi Endo, Matsudo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1972, Ser. No. 245,217
Claims priority, application Japan, Apr. 23, 1971, 46/26,109
Int. Cl. C08f *19/08, 19/10, 19/20, 41/12*
U.S. Cl. 260—876 15 Claims

A molding nitrile resin composition suitable as a material for food-packaging films or food containers which are excellent in processability, transparency, impact resistance, hardness, appearance and gas-impermeability, and which require substantially no heat-stabilizer, is obtained by emulsion-polymerizing in an aqueous medium 95 to 40 parts by weight of a monomeric mixture (a) of 55 to 90% by weight of acrylonitrile or methacrylonitrile and 10 to 45% by weight of a lower alkyl acrylate or a lower alkyl methacrylate, in the presence of 5 to 60 parts by weight of a rubber-like polymer (b) composed of 30 to 80% by weight of an alkyl acrylate or an alkyl methacrylate, 4 to 50% by weight of a conjugated diolefin and 5 to 30% by weight of a vinyl aromatic hydrocarbon. The said composition can be blended, if necessary, with a copolymer obtained by polymerizing in an aqueous medium of the said monomeric mixture (a) in the absence of the said rubber-like polymer (b), in a proportion of up to 100 parts by weight of the copolymer per 100 parts by weight of the said composition, to adjust the content of said rubber-like polymer (b) to any value within the range of 5 to 30% by weight based on the weight of the resulting composition.

3,775,519

PREPARATION OF PHOSPHOROAMIDOTHIONATE BY KETENE ACYLATION

James L. Platt, Jr., San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 28, 1971, Ser. No. 163,520
Int. Cl. C07f *9/24*
U.S. Cl. 260—984 6 Claims

N-acyl derivatives of O,O-dialkyl phosphoroamidothionate are prepared by reacting O,O-dialkyl phosphoroamidothionate with a ketene in the presence of a catalytic amount of phosphoric acid and an acetic acid solvent.

3,775,520

CARBONIZATION/GRAPHITIZATION OF POLYACRYLONITRILE FIBERS CONTAINING RESIDUAL SPINNING SOLVENT

Michael J. Ram, West Orange, and Arnold J. Rosenthal, Whippany, N.J., and Charles M. Clarke, Texas City, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,832
Int. Cl. C01b *31/07*
U.S. Cl. 264—29 25 Claims

A process is provided for the efficient conversion of acrylonitrile homopolymer fibrous materials and closely related acrylonitrile copolymer fibrous materials to graphitic fibrous materials of high tenacity. The process incorporates an initial brief fiber heating step which is conducted at a temperature of about 170 to 220° C., a preoxidation step, and a tandem carbonization/graphitization step as described. The relationship of the various variables required to produce the high tenacity graphitic fibrous product is set forth in the equation provided. In a preferred embodiment of the invention the carbonization/graphitization step of the process is conducted on a reliable and stable basis wherein the desired tenacity is achieved without the necessity of resorting to the exertion of high longitudinal tensions upon the preoxidized acrylic fibrous material. The fibers may contain 2–10 percent residual solvent from the fiber spinning operation.

3,775,521

METHOD OF PRODUCING PAPER-LIKE THERMOPLASTIC SYNTHETIC RESIN FILMS

Sadao Yamamoto, Kyoto, Seiichirou Honda, Osaka, Hisataka Shimizu, Kyoto, and Kanzi Oguma, Osaka, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 838,652, July 2, 1969. This application Dec. 7, 1971, Ser. No. 205,703
Claims priority, application Japan, July 6, 1968, 43/47,372
Int. Cl. B29d *27/00;* B29b *7/04*
U.S. Cl. 264—45 2 Claims

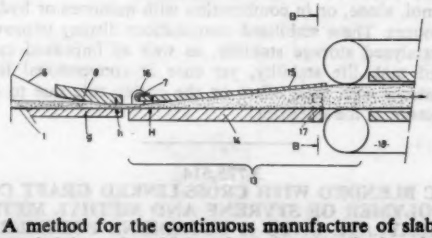
A process for the preparation of paper-like thermoplastic synthetic films on which pencil, fountain pen or similar writing instrument can be used to write as on ordinary paper from pulp, and which can be printed with ordinary printing ink comprising melt mixing and kneading a composition comprising per 100 parts of an olefin resin, 5 to 50 parts of at least one additive resin selected from the group consisting of styrene resins, methyl methacrylate resins, acetal resins, phenoxy resins, vinyl chloride resins, vinyl acetate resins and amide resins, and 10 to 300 parts of an inorganic filler, shaping the melt mixed and kneaded composition into a sheet, and thereafter stretching the sheet biaxially at a temperature ranging from 100° to 170° C.

3,775,522

METHOD FOR THE MANUFACTURE OF SLABS OF EXPANDED FOAM FREE OF LONGITUDINAL CORRUGATIONS

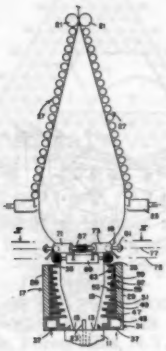
Jacques Auge, Lyons, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Apr. 16, 1971, Ser. No. 134,797
Claims priority, application France, Apr. 16, 1970, 13,796
Int. Cl. B29d *27/04*
U.S. Cl. 264—47 6 Claims



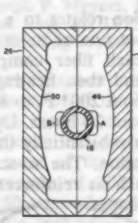
A method for the continuous manufacture of slabs of expanded foam in which a foam-forming liquid mixture is spread and calibrated in thickness between two flexible covering sheets. The edges of the covering sheets are simultaneously connected to form a sheath in which the liquid between the sheath is expanded in an expansion zone. A continuous pressure is exerted on the upper surface of the sheath containing the liquid undergoing expansion in a longitudinal portion of between 50 and 95% of the expansion zone, this pressure being sufficient for the upper face to remain, at all times, a regular surface generated by a horizontal generatrix at right angles to the direction of travel of the sheets. Pressure is preferably uniform and may be applied by a longitudinally flexible, transversely rigid pressure member, pivoted at its upstream end and adapted to bear on the upper sheet in the expansion zone.

3,775,523
METHOD AND APPARATUS FOR MAKING ORIENTED TUBULAR FILM
Harold A. Haley, Media, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed Mar. 4, 1971, Ser. No. 120,978
Int. Cl. B29d 7/24, 23/04
U.S. Cl. 264—89 20 Claims



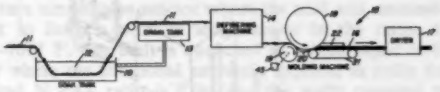
Successive portions of an extruded, advancing tubular film of molten thermoplastic polymeric material are cooled only to within a required orientation temperature range and, while within this temperature range, such portions are stretched to orient the molecules thereof, after which the successive portions are cooled to a temperature below the orientation temperature range while in a stretched condition.

3,775,524
SELECTIVE PARISON HEATING FOR ORIENTED GENERALLY OVAL-SHAPED HOLLOW ARTICLES
Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 1, 1971, Ser. No. 148,736
Int. Cl. B29c 17/07
U.S. Cl. 264—97 10 Claims



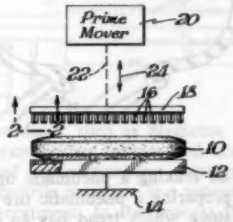
Cylindrical parisons preforms for blow molding generally oval-shaped oriented hollow articles such as bottles, are reheated to orientation temperature with sides of the parison which are to be expanded out along the minor axis of the hollow article being heated to a temperature within the range of 0.25 to 10° F. hotter than the sides corresponding to the major axis of the article. This allows the portion of the parison closest to the mold wall to stretch more and thus reduces thinning out of the portions of the parison which are stretched into the farthest most extensions of the mold cavity.

3,775,525
DAMP PULP MOLDING
Edward H. Cumpston, Jr., Rochester, N.Y. (43 Monument Ave., Old Bennington, Vt. 05201)
Filed July 19, 1972, Ser. No. 273,136
Int. Cl. D21j 3/00
U.S. Cl. 264—115 46 Claims



Damp, fibrous pulp such as cellulose fiber pulp of 20% to 40% solid material is molded by being worked repeatedly with a tool that moves fibers relative to each other for straightening out the fibers and removing air from the pulp to form a damp, felted pump which is then dried. Preferably the tool is a rotor having skid comb teeth that run repeatedly through the pulp in sled runner fashion and work the pulp into a former that is moved progressively away from the rotor to form a length of damp, felted pulp.

3,775,526
METHOD OF MODIFYING THE CHARACTERISTICS OF FLEXIBLE CELLULAR MATERIAL
Chace D. Gilmore, West Chester, Pa., assignor to SW Industries, Inc., Montchanin, Del.
Continuation of abandoned application Ser. No. 846,880, Aug. 1, 1969. This application Jan. 12, 1972, Ser. No. 217,404
Int. Cl. B29d 27/00
U.S. Cl. 264—156 8 Claims

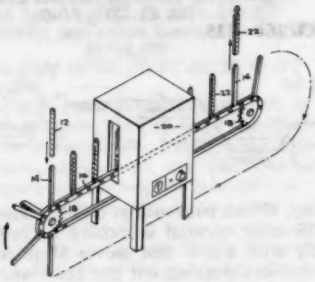


There is described herein a method of modifying the characteristics of a foam bun for use as a pillow and the like by producing a flexible foam structure whose cells are at least partially mechanically reticulated. This mechanical reticulation, provided by mechanically cutting cores from the bun, enhances the porosity and resiliency of the bun.

3,775,527
METHOD OF FABRICATING ELECTRICAL COMPONENT
C. Mills Kinney, Jr., Gaithersburg, and Ronald G. Daringer, Cambridge, Md., assignors to Plastic Tubes Company, division of Multi-Tech, Incorporated, Easton, Md.
Filed June 14, 1971, Ser. No. 152,809
Int. Cl. B29d 7/16
U.S. Cl. 264—159 7 Claims

A method of fabricating capacitors and/or capacitor jackets or the like is disclosed in which elongated, uncured thermosetting tube members are placed on male mould members and subjected to heat for shrinking and dimensionally stabilizing the tube members which are subsequently removed from the male mould members and cut to exact lengths to form individual jacket members

for receiving internal capacitor sub-components which are sealed in each jacket by an epoxy sealing compound inserted in each end of each jacket for holding the sub-component in position.

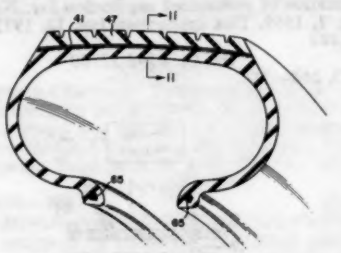


3,775,528

PROCESS OF MAKING A PNEUMATIC TIRE

Heinz Wilhelm Beneze, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 23, 1970, Ser. No. 57,736
Int. Cl. B29c *17/12*; B29h *5/04, 17/28*
U.S. Cl. 264—162 **3 Claims**



A process of making a pneumatic tire which includes the steps of preparing a pneumatic tire tread of conventional tread stock which tread has an outer surface for engaging the road in a finished tire and which has an inner surface to which is adhered a breaker of rayon, nylon or polyester fabric or cord. The fabric or cord is buffed to break open the fibers. The so prepared tread is then placed into a mold which is formed to the shape of a pneumatic tire and a hardenable liquid polymeric material is introduced into the mold which mold forms the side-walls and crown portion of the pneumatic tire. The preferred resinous polymeric material is polyurethane and is introduced into the mold by what is commonly referred to as centrifugal casting and the polymeric material then surrounds the broken fibers of the fabric or cord. The resinous polymeric material is then cured to produce both a chemical and mechanical bond with the fabric or cord.

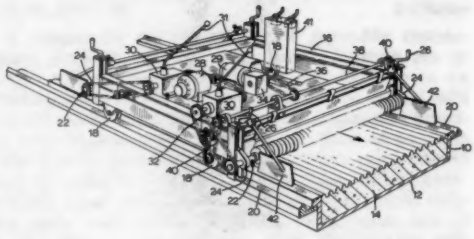
3,775,529

METHOD OF SURFACE FINISHING CAST CONCRETE PANELS

Thomas W. Steenson, 408A Mary Bay Crescent, and William Donald Paton, 190 Driscoll Road, both of Richmond Hill, Ontario, Canada

Filed Aug. 23, 1971, Ser. No. 174,001
Claims priority, application Canada, Aug. 6, 1971, 119,957
Int. Cl. B28b *11/22*
U.S. Cl. 264—162 **4 Claims**

This invention relates to a method of surface finishing cast concrete panels with a ribbed finish and the aggregate between the ribs exposed as to shape. The method comprises the steps of pouring a wet concrete into a casting bed in the form of a concrete panel, forming ribs in the exposed surface of said wet concrete and exposing the aggregate as to shape on the upper surface of the ribs by moving a plurality of rotating discs over the wet concrete surface. The discs are mounted in spaced relation on a shaft, and the movement of said discs at their lower extremities due to their rotation and the movement of said discs due to their movement across the surface of said wet concrete being in the same direction, said shaft and said discs driving a furrow of wet concrete in advance thereof across the surface of said concrete.



3,775,530

MANUFACTURE OF COMPOSITES CONTAINING A THERMALLY SHAPED INORGANIC FIBER FORM

Garth D. Lawrence, Midland, and Jack J. Ott, Hemlock, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,763
Int. Cl. B21f *3/04*; B22d *19/02*; C04b *35/72*
U.S. Cl. 264—257 **10 Claims**

The present invention relates to a method of shaping amorphous fibers about one or more transverse axes between the ends of each fiber comprising forming the fibers into a shape and then heating the shaped fibers at a temperature of about 200° F. to about 1200° F. for a time of about 1 to about 24 hours. Upon cooling, the so-processed fibers retain substantially the same formed and heated fiber configuration. The so-shaped fibers can be employed for uses such as reinforcement of cast metal, ceramic, and plastic shapes.

3,775,531

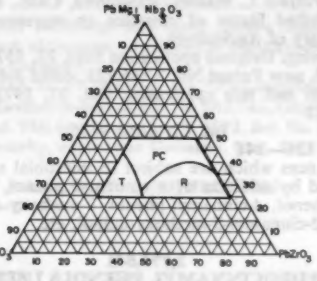
ADDING LEAD MAGNESIUM NIOBATE TO LEAD TITANATE/LEAD ZIRCONATE TO AID HOT PRESSING TO TRANSPARENCY

James W. Smith, Painted Post, N.Y., assignor to Corning Glass Works

Filed Oct. 6, 1971, Ser. No. 187,015
Int. Cl. C04b *35/46, 35/48, 35/64*
U.S. Cl. 264—332 **7 Claims**

Disclosed is an electrooptic system including a transparent ferroelectric ceramic element which possesses memory in that a birefringence corresponding to an applied electric field remains after the field is removed. The electrooptic element is hot-pressed from a family of ma-

terials which comprises solid solutions of the ternary system, lead magnesium niobate-lead titanate-lead zirconate,



and the hot pressed material may additionally contain minor amounts of lead bismuth niobate or bismuth oxide.

3,775,532

REMOVAL OF SULFUR DIOXIDE FROM GAS STREAMS

Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,441
Int. Cl. C01b *17/10*
U.S. Cl. 423—242 **10 Claims**

Sulfur dioxide is removed from a gas stream such as the waste gas generated by fuel combustion, by scrubbing the gas stream with a circulating aqueous solution containing dissolved sodium sulfite, so that a portion of the sodium sulfite is converted to sodium bisulfite. A bleed stream is withdrawn from the circulating solution and reacted with calcium carbonate to produce precipitated solid calcium sulfite, which is filtered off. At least a portion of the solution is then reacted with calcium oxide to precipitate solid calcium sulfate and thereby prevent a buildup of sulfate in the system. The sulfate is originally formed due to in situ oxidation of sulfite. The calcium sulfate is filtered from the remaining solution, which is returned to the gas scrubbing operation.

3,775,533

ACTINIDE COMPOUNDS WITH AMMONIA OR CO AND H

Lubertus Bakker, Mentor, Ohio, assignor of a fractional part interest to Joseph P. Meyers, Palos Verdes, Calif.

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,695
Int. Cl. C01g *43/00, 56/00*
U.S. Cl. 423—253 **13 Claims**

This invention comprises new complex compounds of metals in the actinide series of the Periodic Table of the Elements with carbon monoxide, hydrogen and/or ammonia. These complexes are prepared by heating the metals with one or more of the gases for periods up to 24 hours at temperatures of 200° C. to 370° C. and pressures of 15 to 150 atmospheres. These complex compounds are useful for separating closely related metals from each other as well as separating different isotopes or changing isotope distribution of various metals in the subject series.

3,775,534

AMMONIUM POLYPHOSPHATE SOLUTIONS FROM SUPER WET ACID

Robert S. Meline, Florence, Ala., assignor to Tennessee Valley Authority

Continuation-in-part of application Ser. No. 126,680, Mar. 22, 1971, now Defensive Publication T896,056. This application Nov. 15, 1971, Ser. No. 198,822
Int. Cl. C01b *15/16, 25/26*
U.S. Cl. 423—310 **11 Claims**

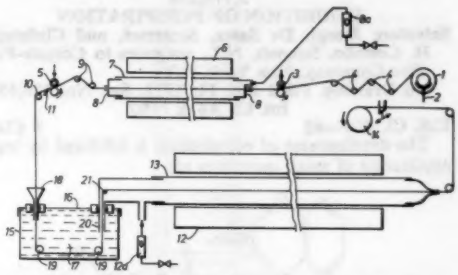
Stable liquid fertilizers having 80 percent or more of the total P_2O_5 in polyphosphate form are prepared from wet-process superphosphoric acid with a polyphosphate content ranging from the normal amount of about 50 percent down to about only 5 percent. Condensation of the P_2O_5 in the acid in the ortho form to the pyro and more highly condensed forms of polyphosphates is accomplished by using the energy available from the heat of reaction of the ammonia and acid. The process is carried out in a simple pipe reactor where the acid and ammonia react to form a melt at temperatures in the range of 600–700° F. The melt is quenched in cooled liquid fertilizer where the additional ammonia required to make the desired $N:P_2O_5$ ratio is fixed and the water required to make the desired grade of fertilizer is added.

3,775,535

PROCESS FOR THE PRODUCTION OF CARBON FIBRE PRODUCTS

Roland Weisbeck, Odenthal-Voiswinkel, Carlhans Süling, Odenthal-Hahnenberg, Gottfried Pampus, Leverkusen, and Lothar Preis, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 11, 1971, Ser. No. 123,369
Claims priority, application Germany, Mar. 14, 1970, P 20 12 286.5
Int. Cl. C01b *31/07*
U.S. Cl. 423—447 **1 Claim**



Carbon fibre products, such as filaments, staple fibres, yarns, woven fabrics, knitted fabrics, and non-woven fabrics, are produced by carbonizing corresponding fibre products of acrylonitrile polymers in a process comprising a two-step heat treatment. In the process the polymeric fibre product is first heated in an atmosphere containing oxygen at a temperature in the range of 150° C. to 400° C. and thereafter carbonized in a furnace at a temperature of at least 1000° C., the fibre product being passed between said steps through a liquid inert to acrylonitrile polymers and forming a gas-tight seal at the inlet of said furnace. Suitable liquids include the eutectic mixture of diphenyl and diphenyl ether, benzene, heavy gasoline, and mercury.

3,775,536

OPIUM ALKALOID ANTIGENS AND ANTIBODIES SPECIFIC THEREFOR

Sidney Spector, Livingston, N.J., and Charles W. Parker, St. Louis, Mo.; said Spector assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Mar. 8, 1971, Ser. No. 122,204, now Patent No. 3,709,868, which is a continuation-in-part of abandoned application Ser. No. 36,999, May 13, 1970. Divided and this application Mar. 17, 1972, Ser. No. 235,803
Int. Cl. A61k *27/04*
U.S. Cl. 424—1 **7 Claims**

Opium alkaloid antigens are prepared by coupling opium alkaloid haptens to immunogenic carrier materials. In preferred embodiments proteins are used as carrier materials and the coupling is effected through the carboxyl group of a carboxy lower alkyl derivative of the phenolic hydroxy group of said alkaloid and a free amino group on the protein thereby yielding a covalent peptide bond.

The resulting antigens produce immunological effects when injected into host animals, including the formation of opium alkaloid specific antibodies. These specific antibodies are useful in bioanalytical techniques for the assay of opium alkaloids in biological fluids.

3,775,537
COPOLYMER COATINGS FOR PHARMACEUTICALS

Klaus Lehmann, Rossdorf uber Darmstadt, and Horst Pennewiss, Darmstadt, Germany, assignors to Rohm G.m.b.H., Darmstadt, Germany

No Drawing. Filed June 18, 1971, Ser. No. 154,615
Claims priority, application Germany, June 27, 1970, P 20 31 871.2
Int. Cl. A61k *27/12*
U.S. Cl. 424—21 **8 Claims**

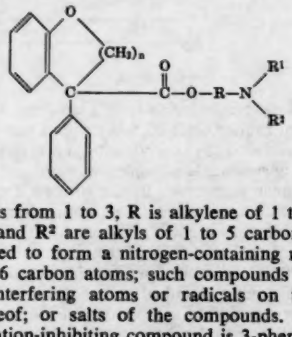
A copolymer comprising more than 90 percent by weight of a polymerized mixture of: (A) at least one hydroxyalkyl ester of an α,β-unsaturated mono- or di-carboxylic acid; and (B) at least one monomer, copolymerizable with (A), which forms a water-insoluble homopolymer when homopolymerized. These non-cross-linked copolymers are soluble in organic solvents and insoluble in, but permeable to, water under physiological conditions. They are useful as cotings for pharmaceutical dosage forms.

3,775,538
INHIBITION OF PERSPIRATION

Salvatore Joseph De Salva, Somerset, and Christopher H. Costello, Summit, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,587
Int. Cl. A61k *7/00*
U.S. Cl. 424—65 **9 Claims**

The development of perspiration is inhibited by topical application of small quantities of:



wherein n is from 1 to 3, R is alkylene of 1 to 5 carbon atoms, R^1 and R^2 are alkyls of 1 to 5 carbon atoms or are conjoined to form a nitrogen-containing ring having from 4 to 6 carbon atoms; such compounds substituted with non-interfering atoms or radicals on the carbon atoms thereof; or salts of the compounds. Preferably, the perspiration-inhibiting compound is 3-phenyl-3-carbo-(beta-diethylamino)-ethoxy - 2,3 - dihydrobenzofuran hydrochloride, it is present in a cosmetic composition at a concentration of from 0.02 to 1.0% and application is to the human axillae in sufficient quantity to deposit a total of from 0.1 to 20 milligrams of the perspiration-inhibiting compound. Also described are cosmetic compositions containing the active perspiration-inhibiting compound.

3,775,539
METHODS AND COMPOSITIONS FOR PREVENTING RETENTION OF PLACENTA FOLLOWING INDUCED PARTURITION IN CATTLE

Donal C. Anderson, Whakatane, New Zealand, assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,815
Int. Cl. A61k *17/00*
U.S. Cl. 424—243 **6 Claims**

Methods employing compositions containing a long-acting glucocorticoid, as for example, dexamethasone trimethylacetate, for preventing retention of fetal membranes following induced parturition in cattle.

3,775,540
CINNAMYL PHENOLS USEFUL AS ANTIMICROBIAL AGENTS

Leonard Jurd, Berkeley, A. Douglas King, Jr., Martinez, and William L. Stanley, Richmond, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Sept. 22, 1970, Ser. No. 74,485, now Patent No. 3,745,222, dated July 10, 1973. Divided and this application Oct. 31, 1972, Ser. No. 302,622
Int. Cl. A01n *9/26*
U.S. Cl. 424—341 **1 Claim**

Substances which are subject to microbial spoilage are preserved by addition of a cinnamyl phenol, e.g., 2-cinnamyl-phenol, 4-cinnamyl-phenol, 2-methoxy-4-cinnamyl-phenol, 2-cinnamyl-5-methoxy-quinol, etc.

3,775,541
DIHYDROCINNAMYL PHENOLS USEFUL AS ANTIMICROBIAL AGENTS

Leonard Jurd, Berkeley, Kenneth L. Stevens, Walnut Creek, and Alfred Douglas King, Jr., Martinez, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed May 25, 1972, Ser. No. 257,031
Int. Cl. A01n *9/26*
U.S. Cl. 424—346 **9 Claims**

Substances which are subject to microbial spoilage are preserved by addition of a dihydrocinnamyl phenol, e.g., dihydro - 2 - cinnamyl-phenol, dihydro-4-cinnamyl-phenol, dihydro-2-cinnamyl-4-methylphenol, etc.

ERRATUM

For Class 426—281 see:
Patent No. 3,775,132

3,775,542
PROCESS FOR TREATING FRAGMENTED SOYBEANS AND PRODUCT MADE THEREFROM

Emil John Salbego, 1113 Winthrop Ave., Joliet, Ill. 60435

Continuation-in-part of application Ser. No. 567,110, July 22, 1966, which is a continuation-in-part of applications Ser. No. 93,877 and Ser. No. 93,878, both Mar. 7, 1961, and Ser. No. 299,993, Aug. 5, 1963, all now abandoned. This application Apr. 1, 1971, Ser. No. 130,455
Int. Cl. A23k *3/00*
U.S. Cl. 426—46 **7 Claims**

Raw (uncooked) soybean flour either alone or mixed with soybean meal or other food material is subjected to a temperature of 70° F.–104° F. and to a surrounding atmosphere having a relative humidity of about 5 percent for at least three weeks, and then to a temperature of 45° F. in an atmosphere having a relative humidity of 95 percent. The product so treated can be mixed with soybean meal or other feed material. It gives an improved feed for livestock, including pigs, and appears to enhance the growth rate of pigs over the growth rate obtained with ordinary soybean feeds.

3,775,543
METHOD OF PRODUCING LOW SODIUM GROUND MEAT PRODUCTS

Thadeus B. Zyss, Highland, Calif., assignor of a fractional part interest to Milo Don Appleman, Jr., Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 869,370, Oct. 24, 1969. This application Oct. 7, 1971, Ser. No. 187,550
Int. Cl. A22c *11/00, 18/00*
U.S. Cl. 426—371 **11 Claims**

A method for producing low sodium, processed meat product in which the improvement comprises employing, as the binding agent, a non-toxic, water soluble potassium phosphate composition in an amount from about 0.2 to 2.0 percent by weight based on the total weight of the ingredient mix in the processed meat products. The potassium phosphate composition is selected from the group consisting of orthophosphate, polyphosphate and pyrophosphate salts of potassium and mixtures thereof.

ELECTRICAL

3,775,544
APPARATUS FOR MAKING STEEL FROM SCRAP METAL

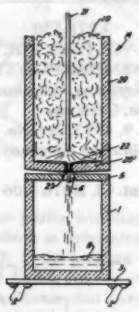
Gunter Geck, Duisburg, and Hans Jurgen Langhammer, Hagen, both of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Division of Ser. No. 17,369, March 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 862,762, Oct. 1, 1969, abandoned. This application Jan. 5, 1972, Ser. No. 215,552

Claims priority, application Germany, Mar. 10, 1969, P 19 11 994.9

Int. Cl. F27b *14/06*; H05b *11/00*

U.S. Cl. 13—2 **9 Claims**



A charge of scrap metal is confined in an upright chamber and a flame is directed upwardly from below against the scrap metal until the same melts. Alloying components are admitted to the molten metal and the temperature of the resulting mixture is raised to a predetermined level at which it becomes converted into pourable steel.

3,775,545
ELECTRONIC MUSICAL INSTRUMENT EMPLOYING A SAMPLING SYSTEM AS A COUPLER

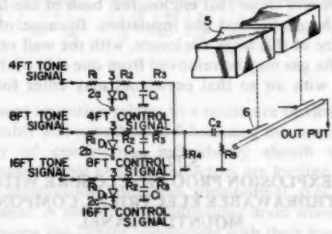
Masao Tsukamoto, Moriguchi, and Tomiji Munehiro, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Continuation of Ser. No. 69,397, Sept. 3, 1970, abandoned. This application Apr. 27, 1972, Ser. No. 248,336

Claims priority, application Japan, Sept. 9, 1969, 44/72453

Int. Cl. G10h *1/06*

U.S. Cl. 84—1.01 **8 Claims**



An electronic musical instrument employing a sampling system as a coupler for obtaining a musical tone by coupling a plurality of tone signals together. The system includes sampling circuits each adapted for sampling with a control signal an input signal applied from a corresponding tone generator which generates a tone signal or from a corresponding envelope circuit which delivers a depression— responsive signal in response to closure of a key switch of the musical instrument, square waveform voltage generators each generating a square waveform voltage as the control signal to the sampling circuit, and duty ratio varying circuits connected to respective square waveform voltage generators for varying the duty ratio of the square waveform voltage so as to vary the magnitude of the output signal of the sampling circuit.

3,775,546
LADDER-LIKE ELECTRONIC MUSICAL INSTRUMENT

Max Werner Honegger, 8143 Sellenburen, Switzerland

Filed June 14, 1972, Ser. No. 262,866

Claims priority, application Switzerland, June 17, 1971, 8839/71

Int. Cl. G10h *1/00*

U.S. Cl. 84—1.01 **3 Claims**

Electronic music instrument with separate tone generators which are assigned to the various tones and which are energizable by contact switches or proximity switches. Geometric-type elements are arranged in a regular assembly departing from a keyboard. The elements are designed and arranged in a manner encouraging the use of the sense of touch. Each element is assigned to a particular tone and capable of triggering said contact switches or proximity siwtches, respectively. The elements may have the form of the rungs of a ladder, or the steps of a stairway, or of mosaic components of a flooring.

3,775,547
CAST EPOXY BUSHING HAVING A WELDABLE FLANGE

Edmund E. Woods, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

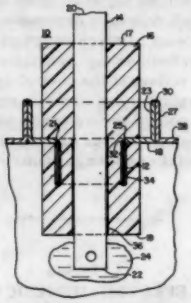
Filed Oct. 12, 1972, Ser. No. 297,111

Int. Cl. H01b *17/30*

U.S. Cl. 174—152 R **10 Claims**

An electrical bushing assembly having an electrical conductor extending through a solid body member cast of insulating material, a rigid metallic mounting member or flange having a generally circular opening therein, a certain portion of said flange adjacent to the opening being embedded in said cast body member, and a cylindrical-shaped, thin, less rigid metallic member attached to said flange adjacent to the opening therein. The less rigid metallic member is completely em-

bedded in the resin of the body member. The bushing assembly is mounted in sealed relationship to a casing enclosing



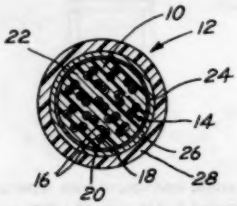
electrical apparatus and fluid dielectric by welding the rigid mounting member or flange to the casing.

3,775,548

FILLED TELEPHONE CABLE

Frederick M. Zinser, Jr., and Joseph Connelly, both of Decatur, Ill., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Feb. 24, 1972, Ser. No. 228,876
Int. Cl. H01b 7/18, 3/30
U.S. Cl. 174—23 C 6 Claims



In a filled telephone cable, the core is filled with a composition comprising petroleum jelly in the amount of about 80 percent by weight, polyethylene and/or polybutene-1 in the amount of about 10 percent by weight, and polyisobutylene in the amount also of about 10 percent weight.

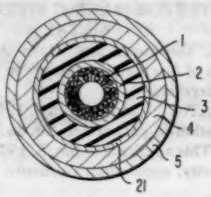
3,775,549

ELECTRICALLY INSULATING POLYPROPLYENE LAMINATE PAPER AND OIL-IMPREGNATED ELECTRIC POWER CABLE USING SAID LAMINATE PAPER

Shinji Matsuda; Hidemitsu Kuwabara, both of Shizuoka; Hiroshi Kubo, Osaka; Yoichi Sasajima, Osaka; Kensuke Suzuki, all of Osaka, and Takashi Fukamachi, Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Tomoegawa Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed June 23, 1972, Ser. No. 265,896
Claims priority, application Japan, June 23, 1971, 46/45478; July 8, 1971, 46/50572
Int. Cl. H01b 9/06; B32b 27/10, 31/12
U.S. Cl. 174—25 R 12 Claims

An insulation for electric cables which comprises a biaxially oriented polypropylene film bonded to an oil-impregnated paper by means of a melt-extruded polyolefin adhesive and



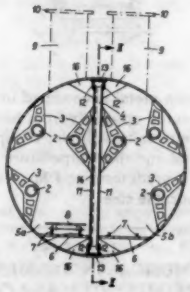
the resulting insulated cable are disclosed.

3,775,550

ELECTRIC HIGH-VOLTAGE POLYPHASE POWER TRANSMISSION SYSTEM

Willi Olsen, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Jan. 9, 1973, Ser. No. 322,210
Claims priority, application Germany, Jan. 14, 1972, P 22 02 403.9
Int. Cl. H01b 9/06
U.S. Cl. 174—27 10 Claims



An electric multi-line high-voltage polyphase power transmission system has two tubular electrically conductive and electrically grounded enclosures, each containing the two or more conductors of two polyphase circuits with the conductors spaced from the enclosure's inside, the two enclosures being formed not by separated tubes but instead by a single large tubular enclosure having a longitudinally extending wall forming it into those two enclosures, both of the latter being filled with compressed gas insulation. Because of the large overall size of this large enclosure, with the wall vertically arranged, the gas may be removed from one side of the wall and replaced with air so that personnel may enter for servicing reasons.

3,775,551

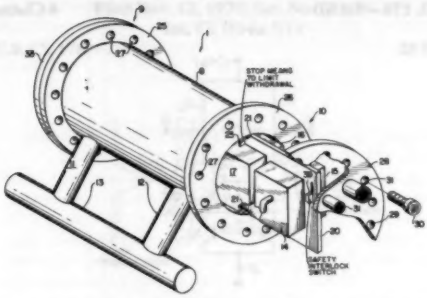
EXPLOSION PROOF ENCLOSURE WITH WITHDRAWABLE ELECTRICAL COMPONENT MOUNTING PANEL

George F. Prehmus, Scotia, and Richard R. Verch, Elnora, both of N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,810
Int. Cl. H05k 5/04
U.S. Cl. 174—52 R 17 Claims

A low cost explosion proof casing is constructed of standard rearward and forward outer annular pipe flanges and a uniform diameter pipe, together with a movable unit including

an electrical component mounting panel having a self aligning rearward end plate secured at one end for sliding movement within the pipe and a forward end plate secured at the forward end of the panel for overlapping the forward flange. Threaded bolts extend through the forward flange and forward end plate; threaded bolts extend through a rearward annular end plate and the rearward flange; and studs in the rearward panel extend through the rearward flange. Axially spaced upper and lower rollers on the panel engage the inner cylindrical surface



of the pipe to facilitate partial withdrawal of the movable unit to a maintenance position as determined by stops wherein it is cantilevered forwardly of the forward end of the pipe, so that the weight of the end plates, panel and electrical components is fully carried by the pipe so that only the threaded fasteners or bolts need be removed completely. Complete withdrawal for extensive maintenance or repair is also provided for. One or more such casings may be mounted on a pipe fabricated sled.

3,775,552

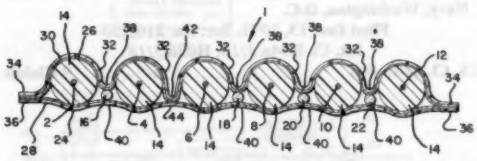
MINIATURE COAXIAL CABLE ASSEMBLY

William Ludlow Schumacher, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 106,468, Jan. 14, 1971, abandoned. This application Dec. 16, 1971, Ser. No. 208,955

Int. Cl. H01b *7/08*

U.S. Cl. 174—105 R **8 Claims**



The present invention relates to a miniature flexible coaxial cable assembly and a method of fabricating the same wherein a plurality of continuous, individually sheath dielectric covered coaxial cable center conductors are located in parallel spaced relationship with their longitudinal axes substantially coplanar. A plurality of continuous drain wires are distributed among the center conductors with their longitudinal axes being coplanar, but offset from the coplanar center conductor longitudinal axes. The center conductors and drain wires are sandwiched between ribbons of conductive foil which are provided thereover with a continuously applied layer of insulation material. The assembly is then bonded along a plurality of lines of contact extending longitudinally of the continuous wires. If the insulation layer is applied by continuous extrusion, such bonding will additionally result in a protective jacket for the assembly.

3,775,553

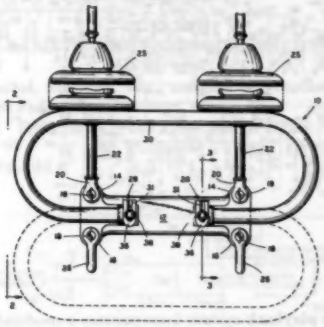
TILTABLE CORONA RING ASSEMBLY

William P. Corley, and James D. Glass, both of Birmingham, Ala., assignors to Anderson Electric Corporation, Leeds, Ala.

Filed Feb. 12, 1973, Ser. No. 331,401

Int. Cl. H01t *19/02*; **H01b** *17/44*

U.S. Cl. 174—144 **10 Claims**



A split, generally elliptically-shaped corona ring has a bearing member secured at each end thereof to permit rotational movement of the ring relative to a transmission line yoke plate. Bolts are received in respective elongated openings in the bearing members and their heads engage flat surfaces thereon, when the bolts are threaded into the yoke plate, to hold the ring in selected angular positions relative to the yoke plate. Stop surfaces on the bearing members engage the yoke plate for limiting rotary movement of the ring relative to the yoke plate.

3,775,554

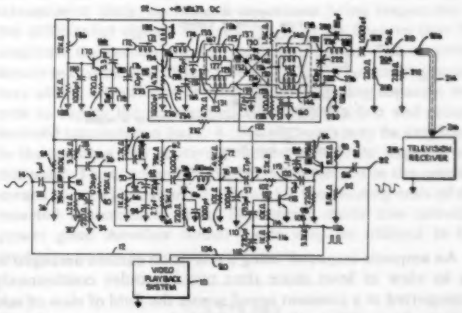
MODULATOR SYSTEM

Bernhard Axel Hjortzberg, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,233

Int. Cl. H04n *5/76*, *5/44*

U.S. Cl. 178—5.4 R **9 Claims**

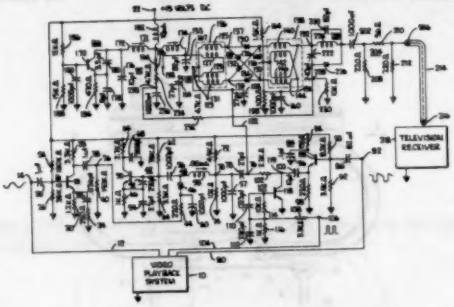


A video playback system incorporates a modulator system to enable direct connection to a television receiver antenna terminals. Frequency modulated audio information signals and video information signals are combined and applied to a DC offset balanced amplitude modulator. The modulator is energized by radio frequency carrier signals and provides radio frequency output signals modulated by the video information signals and the frequency modulated audio information signals.

3,775,555
MODULATOR SYSTEM

David John Carlson, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,234
Int. Cl. H04n 5/78, 5/40; H04b 1/68
U.S. Cl. 178—6.8 9 Claims

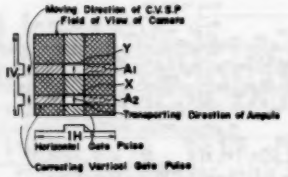


A video playback system incorporates a modulator system to enable direct connection to a television receiver antenna terminals. The modulator system includes a tunable source of radio frequency carrier signals. Each of the frequencies to which the source is tunable is selected to be of a frequency to which a television receiver tuner is tunable. Double sideband modulated output signals from the modulator are applied to a tunable attenuator filter. The filter is tunable to a plurality of frequencies and tracks the tuning of the source of radio frequency carrier signals. The tunable attenuator filter attenuates the lower sideband signal information of the output signals from the modulator to provide vestigal sideband modulated radio frequency output signals.

3,775,556
AMPOULE INSPECTOR USING A TELEVISION CAMERA

Kazuo Nagamatsu, 6-98, Obayashi-aza-Nishiyama, Takarazuka, Japan

Filed July 31, 1972, Ser. No. 276,796
Int. Cl. G01n 21/28; H04n 1/38, 7/18
U.S. Cl. 178—6.8 10 Claims

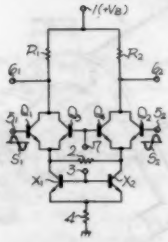


An ampoule inspector using a television camera arranged so as to view at least more than two ampoules continuously transported at a constant speed across the field of view of said camera in equidistantly spaced relation to one another in which discriminating means detects abnormal portions of video signals of said camera corresponding to the defective portions of ampoules to be inspected through respective masks provided by gate means for restricting the scope of the video signals of said camera into respective certain areas corresponding to each of the areas of the ampoules to be inspected and moving to synchronize with the video signals of ampoules transported in the field of view of said camera for a certain time. This ensures an inspection of ampoules which is accurate, precise and quick and extremely suitable for use in mass-production industries.

3,775,557
TRANSISTOR CIRCUIT

Yoshio Ishigaki, Tokyo, and Takao Tsuchiya, Fujisawa, both of Japan, assignors to Sony Corporation, Shinagawa-ku, Tokyo, Japan

Continuation of Ser. No. 32,534, April 28, 1970, abandoned.
This application Mar. 3, 1972, Ser. No. 231,763
Claims priority, application Japan, May 1, 1969, 44/34195
Int. Cl. H04n 9/50; H03k 5/20; H03d 3/18
U.S. Cl. 178—5.4 SD 4 Claims

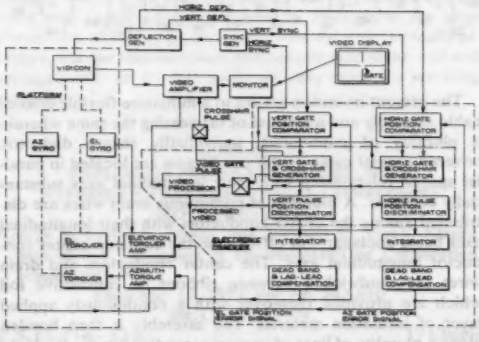


A transistor detection circuit for use as an integrated circuit device including a pair of transistors which are coupled between a power supply and a constant current source. Each of the transistors have corresponding electrodes cross-coupled. A second pair of transistors provides a switching control network to regulate the conduction of the first pair of transistors. When signals of opposite polarities are coupled to the two inputs of the first two transistors, and a switching signal is coupled to the control transistors, an output signal is derived which is twice the magnitude that would otherwise be available if an input signal were coupled only to one of the two transistors. The transistor circuit of the present invention is useable as a phase detection circuit and in particular is readily adaptable to a color demodulator for detecting color different signals in a conventional television receiver.

3,775,558
DIGITAL PHASE DISCRIMINATORS AND VIDEO GATE GENERATORS

Marc L. Moulton, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 13, 1971, Ser. No. 210,259
Int. Cl. H04n 3/16; H03k 5/18
U.S. Cl. 178—6.8 8 Claims



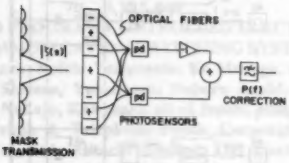
Digital pulse position discriminators and video gate and crosshair generators wherein the intervals during the gated period in which the first and last video pulses occur are com-

pared, and the resultant error is used to reposition the gate about the video pulses such that they are centrally located therein.

3,775,559
APERTURE DESIGNS FOR FACSIMILE SCANNING APPARATUS

Bruno J. Vieri, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1970, Ser. No. 88,896
Int. Cl. H04n 5/14
U.S. Cl. 178—7.1 **28 Claims**

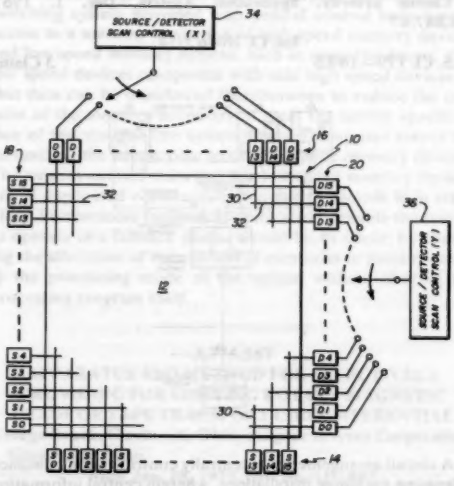


Definite limits on bandwidth and transmission time in facsimile communication lead to a system designed to have the lowest acceptable resolution, but with the best possible Modulation Transfer Function (MTF) within the limits. Fourier transform methods are applied herein to facsimile scanning techniques which include the effects of the sampling action of scanning. A multi-aperture scanner is disclosed as the conclusion of the analysis with selective positive and negative detection of the calculated aperture response lobes so as to produce the sharpest facsimile reproduction with minimum aliasing and extraneous line structure reproduction.

3,775,560
INFRARED LIGHT BEAM X-Y POSITION ENCODER FOR DISPLAY DEVICES

Frederick A. Ebeling, Dearborn, Mich.; Roger L. Johnson, Monticello, and Richard S. Goldhor, Champaign, both of Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Feb. 28, 1972, Ser. No. 229,870
Int. Cl. G08c 21/00
U.S. Cl. 178—18 **13 Claims**

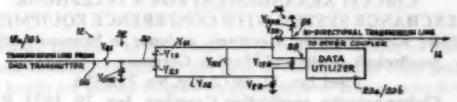


A crossed light beam position encoder including *x* and *y* coordinate arrays of paired infrared light sources and detectors for covering a display device surface with *x* and *y* crossed light beams, scanning means coupled to the sources and detectors for electronically sequentially scanning the *x* and *y* arrays so that only one source is emitting light and its associated detector is detecting light at any particular time. Means are included for noting the digital address of the beams during sequential scanning and for stopping the scan when the beams are interrupted, the digital address and therefor the position of the broken beams are transferred back to a computer.

3,775,561
WIDE-BAND TRANSMISSION LINE DIRECTIONAL COUPLER

Henry Guckel, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 21, 1972, Ser. No. 219,726
Int. Cl. H04l 5/14
U.S. Cl. 178—58 R **14 Claims**



Wide-band directional couplers are provided whereby a transmission line may be utilized for simultaneous sending and receiving of data processing and other signals. The decoding between sent and received signals is accomplished by the transmission line couplers. Each coupler may employ first and second inserted transmission lines having sending and receiving ends. The signals to be transmitted are supplied in duplicate to the sending ends of both inserted transmission lines by sending means which also may include matching impedances to provide reflectionless termination of the sending ends of both lines. The bi-directional transmission line is connected to the receiving end of the first inserted transmission line by matching means whereby the characteristic impedances of both the bi-directional line and the first inserted line are matched to avoid reflection. The receiving end of the second inserted line is given a matched termination to avoid reflection. The incoming signal from the bi-directional transmission line is received by receiving means connected between the receiving ends of the first and second inserted transmission lines, such receiving means being responsive to the differential signals beteeen the inserted lines so that the duplicate transmitted signals are balanced out. The receiving means may include a differential amplifier. The sending means may utilize a transistor driving amplifier having separate outputs to supply the transmitted signals to the first and second inserted transmission lines. Active elements may be employed in the sending and receiving means to provide negative admittance. Thus, a tunnel diode may be utilized in the sending means to provide balanced driving for the sending ends of the inserted transmission lines. The tunnel diode also provides power gain. Another tunnel diode may be utilized in the receiving means to provide power gain.

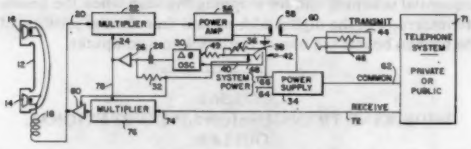
3,775,562
SECURITY PHONE

James W. Crimmins, Wilton, and Peter W. Hartman, Trumbull, both of Conn., assignors to Data Transmission Sciences, Inc., Bethel, Conn.

Filed May 4, 1971, Ser. No. 140,065
Int. Cl. H04m 1/68
U.S. Cl. 179—1.5 R **24 Claims**

An electrical signal scrambling system operative to convert intelligible voice signals to one of a plurality of states of uniquely coded unintelligible signals prior to transmission through a communication network and operative to reconvert

received unintelligible signals into normally intelligible signals. The scrambling system is adapted for mounting directly within the handset of a normal telephone terminal,



with selection of an unintelligible state provided by a set of plugs. Operating power for the scrambling system is provided in a novel manner from the communication network.

3,775,563

CIRCUIT ARRANGEMENT FOR A TELEPHONE EXCHANGE SYSTEM WITH CONFERENCE EQUIPMENT

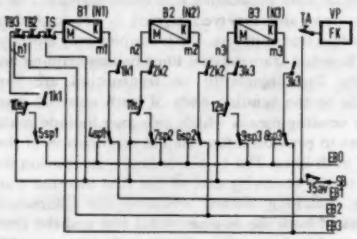
Peter Klein, Gauting, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 31, 1972, Ser. No. 222,196

Claims priority, application Germany, Jan. 29, 1971, P 21 04 337.8; Jan. 29, 1971, P 21 04 263.7

Int. Cl. H04m *3/56*

U.S. Cl. 179—2 TV **9 Claims**



Apparatus is described for telephone exchange installations having a video signal handling capability for completing a conference connection thereover. Each subscriber station is equipped with a video device consisting of a television camera and receiver. The video devices can be connected over a video conference transmission network having a single picture line, connected in common to all video devices, and a combined picture line capable of transmitting a combined picture of all conference participants. All video devices can have their receivers connected to the combined picture line and their cameras and receivers to the common single picture line. These connections are made over switch elements at the subscriber stations which are controlled by voice signal responsive devices. Means are provided to insure that only one voice signal responsive device can operate at any given time.

3,775,564

SWITCHING ARRANGEMENT FOR CONFERENCE CALL CONNECTIONS IN PRIVATE BRANCH TELEPHONE EXCHANGES

Siegbert Heller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

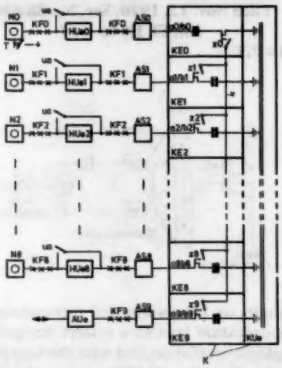
Filed Mar. 24, 1971, Ser. No. 127,527

Claims priority, application Germany, Mar. 25, 1970, P 20 14 478.9

Int. Cl. H04m *3/56*

U.S. Cl. 179—18 BC **4 Claims**

A switching arrangement for the connection of conference calls in a private branch telephone exchange is described. The exchange has conference lines connectable over a repeater network. The subscriber sets taking part in a conference call are successively dialed by an initiating subscriber set. A conference device is provided and is constituted by an initiator device, conference unit devices for each subscriber set and a repeater network. The conference device has connected to its inputs, over connection circuits and conference lines for each initiator unit and conference unit, switching matrices which



connect the latter with trunk repeaters. The conference device includes switching means controllable by switching operations of the initiator whereby a first switching device connects the initiator unit to the repeater network or a matrix line leading to the conference units. A second switch in the switching unit connects the connection circuit of the next free conference unit with the repeater network or the matrix line, depending on the position of the first switch.

3,775,565

CIRCUIT ARRANGEMENT FOR CENTRALLY CONTROLLED TELEPHONE EXCHANGE INSTALLATIONS

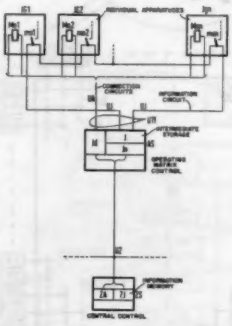
Karl Rutkowski, Pullach, and Klaus Kunert, Germering, both of Germany

Continuation-in-part of Ser. No. 780,414, Dec. 2, 1968, abandoned. This application May 24, 1971, Ser. No. 146,292

Claims priority, application Austria, Dec. 1, 1967, 10,887/67

Int. Cl. H04q *3/54*

U.S. Cl. 179—18 ES **3 Claims**



A circuit arrangement for centrally controlled long distance telephone exchange installations, wherein central information transmission circuits are provided between central control means and centrally controlled individual apparatus. The latter may, for example, comprise internal connection sets,

long distance line repeaters, exchange office repeaters in subscriber installations with extension stations, registers, dial receivers and the like in which connections of the centrally controlled individual apparatuses to the information transmission circuits are jointly controlled. In the centrally controlled exchange installation, there is provided between the central control mechanism and the centrally controlled individual apparatus, at the location of the latter, a common connection mechanism which receives connection commands through the address informaton from the central control mechanism. The common connection mechanism controls the connection of the individual apparatus to information lines over connection circuits.

3,775,566

STORED PROGRAM CONTROLLED ELECTRONIC COMMUNICATION SWITCHING SYSTEM

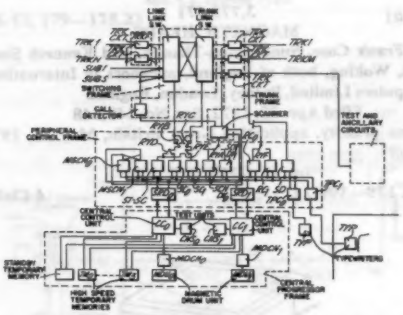
Haruo Akimaru; Koichi Yamamoto; Ko Muroga, all of Tokyo; Hirotoshi Shirasu, Yokohama; Noboru Araki, Tokyo, and Toshihiko Nakajo, Kawasaki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation; Nippon Electric Co., Ltd.; Hitachi Limited; Oki Electric Industry Co., Ltd. and Fujitsu Limited, Tokyo, Japan

Filed July 28, 1971, Ser. No. 166,881

Claims priority, application Japan, Aug. 15, 1970, 45/71159

Int. Cl. H04q *3/54*

U.S. Cl. 179—18 ES **4 Claims**



A stored program controlled electronic communication switching system provided with central control units having access to a memory consisting of high speed memory devices and low speed memory devices, such as magnetic drums. The low speed devices co-operate with said high speed devices so that data can be transferred therebetween to reduce the cost ratio of the memory necessary to meet the service specification of the system. The system further comprises means for minimizing the access time to the low speed memory devices. The central control units and the low speed memory devices are of duplicated construction in order to provide high reliability. Furthermore facilities are provided to enable the system to operate in a fallback mode, should faults occur, by changing the allocation of the content of memories to thereby modify the processing mode of the system without altering the processing program itself.

3,775,567

APPARATUS AND METHOD FOR SELECTIVELY PROVIDING FOR SHIFTING ROTARY MAGNETIC HEADS OF TAPE TRANSPORT CIRCUMFERENTIAL

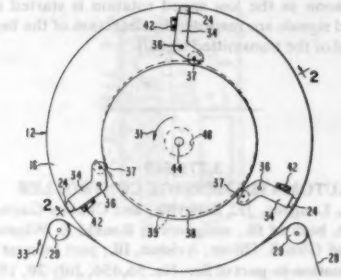
George Bruck, Cincinnati, Ohio, assignor to Avco Corporation, Greenwich, Conn.

Filed Jan. 28, 1971, Ser. No. 110,493

Int. Cl. G11b *5/52, 21/10*

U.S. Cl. 179—100.2 CA **11 Claims**

Apparatus and method for compensating for the stretching or shrinking of a magnetic tape used with a tape transport of the type having one or more heads mounted on a rotor for rotation about a central axis. The heads are adapted for movement in scanning relationship to the magnetic tape when the latter is disposed adjacent to and movable along at least a portion of the arcuate path of travel of the heads. The heads are



shiftably coupled to the rotor to permit movement of the heads circumferentially of the path of travel of the rotor and the heads are shifted lengthwise of the tape to compensate for head position errors due to changes in the length of the tape caused by shrinkage or stretching.

3,775,568

SIGNAL RECORDING AND REPRODUCING APPARATUS AND SIGNAL TRANSMISSION SYSTEM

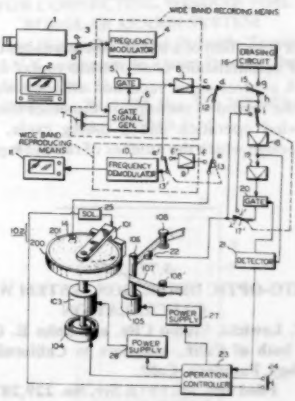
Tetsuo Hino, Hirakata; Isao Kozu, Osaka; Susumu Hashiguchi, Hirakata; Takenori Akamine, Moriguchi; Katsutoshi Nishimura, Osaka; Takao Orita, Suita; Kiyoji Fujisawa, Hirakata, and Akio Nishiyama, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Nov. 4, 1971, Ser. No. 195,721

Claims priority, application Japan, Nov. 6, 1970, 45/98443; Nov. 7, 1970, 45/98588

Int. Cl. G11b *5/86, 19/28*

U.S. Cl. 179—100.2 R **11 Claims**



A signal recording and reproducing apparatus comprises a magnetic disc recorder and a magnetic tape recorder. Signals reproduced from a magnetic disc are recorded on a magnetic tape during low speed rotation of the magnetic disc and movement of the magnetic tape which is moved synchronously with the low speed rotation of the magnetic disc, whereby the influence of the irregularity of the rotation of the magnetic disc and the movement of the magnetic tape on the signals is eliminated. The apparatus can also be used as a signal trans-

mission system by including a transmitting device and a receiving device. The transmitting device reproduces signals recorded on the magnetic disc and transmits the reproduced signals to the receiving device through a transmission line during the low speed rotation of the magnetic disc. The receiving device records the transmitted signals on a magnetic disc during the low speed rotation. The reproduced signals are transmitted as soon as the low speed rotation is started and the transmitted signals are recorded by detection of the beginning and the end of the transmitted signals.

3,775,569

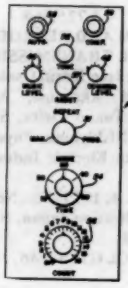
AUTOMATIC MESSAGE CONTROLLER

Edmund L. Lougeay, Jr., Belleville, and Charles Garner, East St. Louis, both of Ill., assignors to Ronald E. Winston, Belleville and Glen S. Oliver, Aviston, Ill.; part interest to each

Continuation-in-part of Ser. No. 56,456, July 20, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,112

Int. Cl. G11b *15/06, 23/18*

U.S. Cl. 179—100.2 S **7 Claims**



Playback operation of a stereo tape cartridge type of player-recorder is automatically controlled to replay a pre-recorded message. A control signal recorded on one track of the tape following the recorded message on the other track initiates an off or rewind operation and a timing cycle, and pulses a counter through which the number of replays is preset.

3,775,570

MAGNETO-OPTIC DETECTION SYSTEM WITH NOISE CANCELLATION

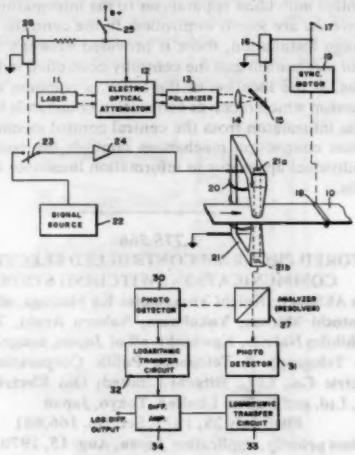
George W. Lewicki, Studio City, and John E. Guisinger, Altadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 25, 1972, Ser. No. 229,287

Int. Cl. G11b *11/10*

U.S. Cl. 179—100.2 CH **6 Claims**

In a magneto-optic readout system, a polarized beam of light from a laser is subjected to the magneto-optic effect of a magnetic record medium, and then passed through an analyzer which resolves the beam into two orthogonal vector components so oriented that the two components are of equal amplitude when the angle of rotation due to the magneto-optic effect is zero. Separate photodetectors produce two output signals which are proportional to the amplitudes of the vector components. The two output signals are combined in a differential amplifier through separate logarithmic transfer



circuits to produce an output signal proportional to the ratio of the two original detector signals.

3,775,571

MAGNETIC HEADS

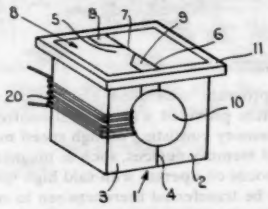
Derek Frank Case, Sunbury-on-Thames, and Kenneth Stammers, Woking, both of England, assignors to International Computers Limited, Putney, London, England

Filed Apr. 28, 1972, Ser. No. 248,548

Claims priority, application Great Britain, May 26, 1971, 17,225/71

Int. Cl. G11b *5/42, 5/22*

U.S. Cl. 179—100.2 C **6 Claims**



To offset damage to the pole face surfaces of ferrite head blocks of magnetic transducing heads which are easily susceptible to wear and impact damage. The head block is reinforced by providing a reinforcing member surrounding the pole face surface such that one surface of the reinforcing member provides a surface co-extensive with the pole face surface, the combined area of the co-extensive surfaces being greater than the cross sectional area of the head block providing the pole face surface.

3,775,572

CONDENSER MICROPHONE

Hisanori Ishibashi, Tokyo; Motomu Mimachi, Atsugi, and Masahisa Iwata, Hatano, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 29, 1972, Ser. No. 284,466

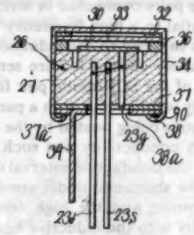
Claims priority, application Japan, Aug. 31, 1971, 46/78484

Int. Cl. H04r *19/04*

U.S. Cl. 179—111 R **12 Claims**

A condenser microphone and method of construction is described. The condenser microphone is integrally formed

with a number of electrical leads molded into an insulating member of the microphone and with an active electronic element bonded to one of the leads and having an electrode con-



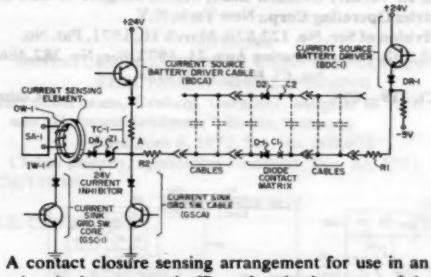
nected to the lead and also capsulated in the insulating member and with electrodes of the active element connected to the other leads so as to provide a compact, rugged and inexpensive condenser microphone.

3,775,573

CONTACT STATUS SENSING ARRANGEMENT

David E. Gaon, Villa Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 2, 1972, Ser. No. 294,065
Int. Cl. H04m 3/26
U.S. Cl. 179—175.23 **10 Claims**



A contact closure sensing arrangement for use in an electronic telephone central office wherein the status of the contacts is sensed by applying voltages of opposite polarities to the two conductors leading to the contact pair. One of the two leads is then abruptly switched from the source of the one polarity to a second source via a Zener diode and a magnetic core. This operation provides a very steep wave front and consequently a sharp output pulse from the core. Also disclosed is an arrangement for preventing false indications to the sensing equipment by including circuitry to keep a current flowing in the cable conductors to the contacts.

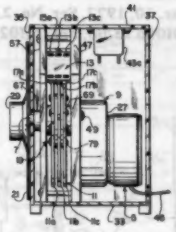
3,775,574

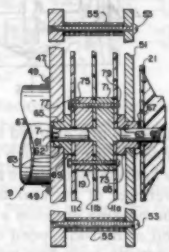
WEEKLY CYCLE TIMING MECHANISM WITH SHAFT SECURING MEANS FOR PREDETERMINED ADJUSTABLE PROGRAMMING CAM ASSEMBLY

Robert L. Coe, St. Louis, Mo.

Continuation of Ser. No. 200,428, Nov. 19, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,617
Int. Cl. H01h 43/18
U.S. Cl. 200—38 BA **5 Claims**

Security timing apparatus for simulating occupancy in a building by turning on and off certain electrical lights and/or minor appliances such as a radio to deter a burglar from breaking into the building. This apparatus has a set of disk cams carried on a shaft which is driven at a rate of one revolution per week by a synchronous clock motor. Each of the cams in the cam set has a plurality of cam formations on its periphery for opening and closing a respective switch which turns on and off one or more of the above-mentioned lights or appliances. The cam formations on each cam differ in pattern





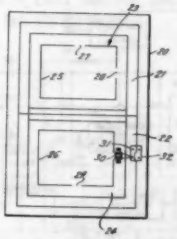
and position from those on the periphery of each of the other cams in the set. Each of the cams of the cam set is secured to the shaft in any one of seven preselected fixed positions to provide many different sequences of operation of the lights and appliances each day and on each different day of the week.

3,775,575

SWITCH FOR CONNECTING WINDOW FOIL WITH A BURGLAR ALARM SYSTEM

Philip J. Parlato, Kings Park, and Orlando Trasorras, Flushing, both of N.Y., assignors to Alarm Products International, Inc., Long Island City, N.Y.

Filed June 30, 1972, Ser. No. 267,901
Int. Cl. H01h 3/16
U.S. Cl. 200—61.71 **8 Claims**



A foil window switch consists of two assemblies carrying respective elongated sliding contacts. One assembly is stationarily mounted and the other is mounted on a window or other access opening to a building, and terminals on the movable assembly are connected to a conventional conductive foil on the window. Movement of the window by some distance greater than a preset distance opens the connection between

the sliding contacts to initiate an alarm. The assemblies are capable of top, bottom or side installation in the window.

3,775,576

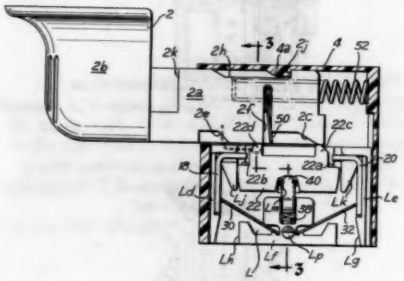
BUTT-CONTACT SPEED CONTROL TRIGGER SWITCH

Harry W. Brown, Big Bend, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 10, 1972, Ser. No. 233,621

Int. Cl. H01h *13/08, 3/42*; **H02p** *5/36*

U.S. Cl. 200—157 **13 Claims**



A self-enclosed trigger switch adapted for mounting within the handle of a portable electric tool such as a drill, saw or the like. The switch has a housing mounting a slidable trigger to be depressed by the forefinger of the user to start the tool and control its speed. The housing encloses a two-pole butt-contact on-off switch and a thyristor speed control circuit. The housing has three sections including two inter-fitting base halves and a frame. The two base halves form a center compartment therebetween in which the speed control circuit is mounted. The frame clamps the two base halves together and forms with the opposite sides of the respective base halves left and right side compartments in which the respective butt-contact sets of the double-pole switch are mounted for actuation by the trigger. The frame also mounts the trigger for reciprocal sliding movement along the top of the two base halves to control both the switch and speed control circuit.

3,775,577

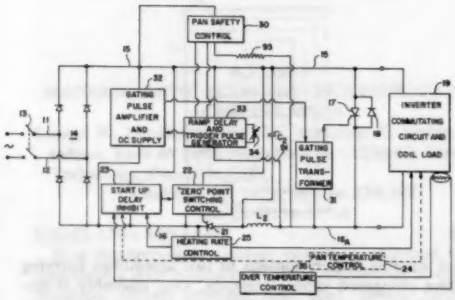
INDUCTION COOKING APPARATUS HAVING PAN SAFETY CONTROL

Philip H. Peters, Jr., Greenwich, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,924

Int. Cl. H05b *5/04*

U.S. Cl. 219—10.49 **37 Claims**


PAN SAFETY CONTROL
GATING PULSE AMPLIFIER AND DC SUPPLY
RAMP DELAY AND TRIGGER PULSE GENERATOR
GATING PULSE TRANS-FORMER
INVERTER COMMUTATING CIRCUIT AND COIL LOAD
START UP DELAY INHIBIT
"ZERO" POINT SWITCHING CONTROL
HEATING RATE CONTROL
PAN TEMPERATURE CONTROL
OVER TEMPERATURE CONTROL

An improved induction cooking unit and power supply therefore having a pan safety control for automatically sensing improper operation of the induction cooking unit due to the use of an unsuitable pan fabricated from a high conductivity material such as aluminum or copper. Lower power versions of the unit (115v.) employ a chopper inverter circuit utilizing a single SCR and feedback diode pair as the power controlling element of the circuit and higher power versions (230v.) use two such SCR/diode pairs connected in series for converting direct current potential to a high frequency pulsating excitation potential that is supplied to the induction heating coil of the unit. The pan safety control feature senses whether the conduction interval of the SCR/diode pair falls within preset limits which normally would occur with a pan of suitable conductivity characteristics being heated by the coil. Under conditions where a high conductivity pan such as aluminum or copper is employed, the conduction interval of the single SCR and diode pair will be shortened under conditions where the circuit has been running and the high conductivity pan is brought into proximity with the inductive heating coil. Under these conditions, the pan safety control circuit senses the shortened conduction interval of the SCR and feedback diode pair and shuts down the chopper inverter. A second situation that can occur is where the high conductivity pan is physically disposed over the inductive heating coil at the time of initial turn-on of the induction cooking unit. Under these conditions the pan safety control senses a prolonged conduction interval falling outside a preset limit and similarly shuts down the chopper inverter.

3,775,578

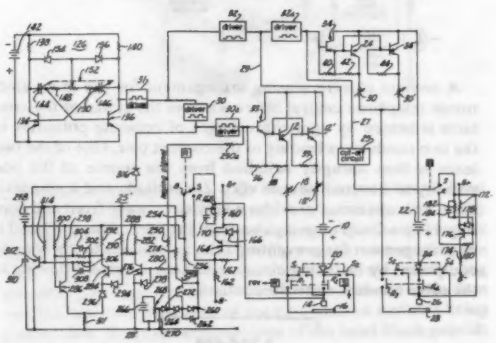
POLARITY REVERSAL SYSTEM FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Dalton R. Verner, Orchard Lake, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Division of Ser. No. 122,830, March 10, 1971, Pat. No. 3,732,392. This application Aug. 21, 1972, Ser. No. 282,486

Int. Cl. B23p *1/08, 1/14*

U.S. Cl. 219—69 C **6 Claims**



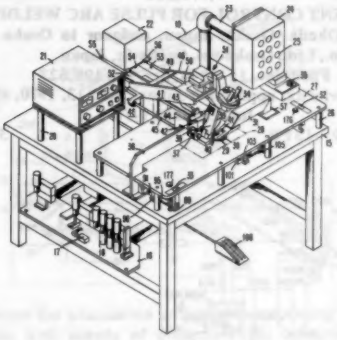
A control system is provided with an electronic switch control network for maintaining a constant polarity gap output signal from a single or multiple electrode gap system independently of whether the electrical power conducting leads from the power source are connected to one or the other of the EDM gap elements. In a multiple gap setup, provision is made for independently changing polarity of the gap elements in the different gaps. The gap output signal which is ordinarily representative of gap voltage is then utilized in other associated EDM circuits such as for an example power feed control networks and machining pulse cut-off control networks to regulate their operation.

3,775,579

METHOD AND APPARATUS FOR REPAIRING PRINTED CIRCUITS

Anthony V. Burghart, Endicott; David E. Houser, Apalachin; John E. Kieffer, Endwell, and George A. Wallace, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1972, Ser. No. 257,593
Int. Cl. B23k *1/02*
U.S. Cl. 219—85 11 Claims



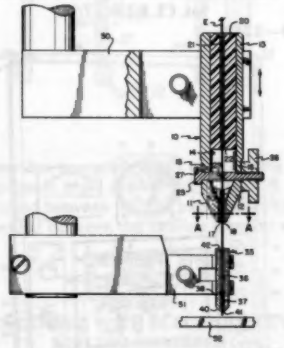
A method and apparatus for repairing an open or void in a printed circuit line on a printed circuit board wherein the board is positioned with the open underneath a bonding head and metallic ribbon material is positioned over the open, thermal compression bonded to the circuit line on one side of the open, cut to length, and then thermal compression bonded to the circuit line on the other side of the open.

3,775,580

MINIATURE ELECTRODE CLAMP AND GUIDE FOR ELECTRIC-SPARK MACHINING

Karl Scherbaum, Grobzig, Germany, assignor to VEB Steremat "Hermann Schlimme", Berlin, Germany

Filed June 6, 1972, Ser. No. 260,074
Claims priority, application Germany, Dec. 23, 1971, WP B 23p/159 881
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 E 8 Claims



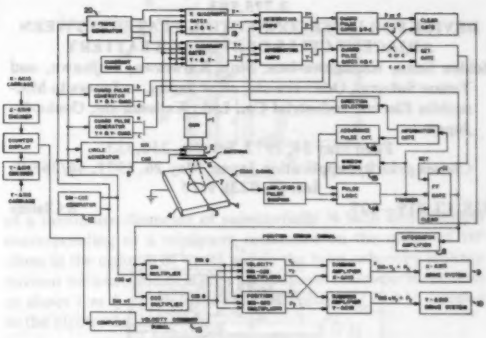
A clamp and guide structure for subminiature electrodes for electric spark machining in which the clamp is comprised of a tubular member having one relatively fixed clamping jaw and one resilient jaw. The jaws have semi-circular positioning grooves for the electrode. A subminiature glass guide is aligned with the jaws for guiding the electrode, the length of the guiding duct in the guide being several times as large as the diameter of the electrode.

3,775,581

SEAM TRACKING METHOD

Albert M. Sciaky, Palos Park, Ill., assignor to Welding Research, Inc., Chicago, Ill.

Filed June 23, 1971, Ser. No. 155,790
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EM 6 Claims



There is herein disclosed a method for controlling the motion of an electron beam gun with respect to a work piece so that the electron beam will follow the path along the seam between the two parts which are to be welded. Means are provided for maintaining a fixed tangential velocity along the path. Control of the motion is achieved from signals derived as the seam is scanned by the circular motion of the electron beam in the area including the seam. These signals are in the form of pulses generated by the reduction in secondary and reflected electrons as the electron beam traverses the seam. These pulses bear a phase relationship to a reference sinosoid and are processed in the control so as to provide the sine and co-sine of the angle the path takes with respect to a reference axis. From the sine and co-sine terms the X and Y motion components are derived and fed to servo operators which drive the gun with respect to the work along the two mutually perpendicular axes so that the gun motion is always tangential to the path at a desired fixed velocity.

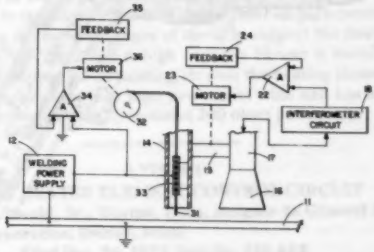
Means are provided for countering the effect of extraneous noise pulses and for supplying substituted pulses for weak or missing pulses.

3,775,582

PROXIMITY CONTROL USING MICROWAVE TECHNIQUES

William F. Iceland, Los Alamitos, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 9, 1971, Ser. No. 206,462
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 PL 8 Claims



A system is disclosed combining an arc welder having an electrode with an electromagnetic wave source including an

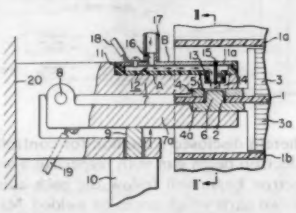
antenna and an interferometer wherein the electromagnetic waves are reflected off the surface of the welding workpiece and the reflected waves are phase matched with the incident waves to produce a signal whose amplitude is related to the spacing between the surface of the workpiece and the antenna. This signal is used to drive a motor to move the electrode and the antenna in unison to maintain the required spacing.

3,775,583

DEVICE FOR INTERCONNECTING PLATES BETWEEN ADJACENT CELLS OF STORAGE BATTERY

Ichiro Sano, Kanagawa-ken; Sinji Karasawa, Fujisawa, and Tetsuo Sakurai, Odawara-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan

Filed May 24, 1972, Ser. No. 256,333
Claims priority, application Japan, May 26, 1971, 46/36530
Int. Cl. B23k *9/16*
U.S. Cl. 219—127 **8 Claims**



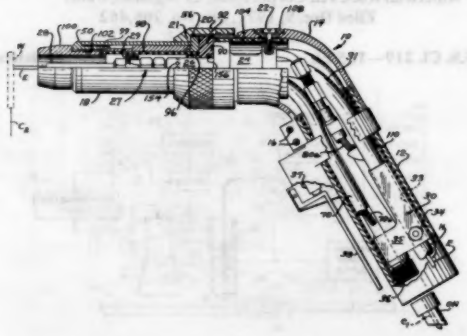
A device for interconnecting plates between the adjacent cells of a storage battery is provided which comprises a pair of welding jig members for holding a pair of connector lugs disposed in the adjacent cells respectively and pressing them against a partition wall between the adjacent cell chambers, and an arc welding torch mounted on one of the pair of connector lug holding and pressing members. In operation, the arc is established between the electrode and a projection of one of the pair of connector lugs extended through an aperture of this partition wall and fitted into an aperture of the other connector lug, whereby the pair of connector lugs are fused and joined together.

3,775,584

WELDING GUN

Delford A. Moerke, Lombard, Ill.

Filed Nov. 30, 1972, Ser. No. 310,940
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **9 Claims**



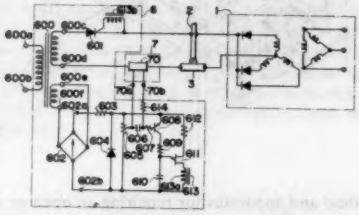
Portable welding gun has an outer housing and a detachable inner body through which the wire electrode and inert gas feed. A water-cooled separable nozzle body is assembled to said housing and about a forwardly projecting portion of the inner body which supports a replaceable current pick up tip through which the wire electrode feeds to the outer end of the nozzle body. The forwardly projecting portion comprises inner and outer sleeves which define an inert gas chamber encircling the electrode and is so ported as to distribute the inert gas about the current pick up tip, the nozzle body channeling the encircling gas to its outer end to provide a protective shield thereof about the welding arc.

3,775,585

CURRENT CONTROL FOR PULSE ARC WELDING

Toshiyuki Okada, Osaka, Japan, assignor to Osaka Transformer Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed Nov. 15, 1971, Ser. No. 198,623
Claims priority, application Japan, Nov. 13, 1970, 45/99464
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 R **3 Claims**



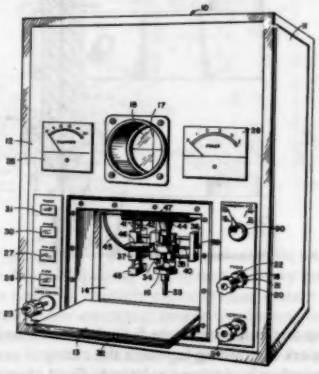
A pulse arc welding method and device for maintaining a pulse current at a constant value, which said current is periodically superimposed with DC welding current, even when the power source voltage or arc voltage has changed, through the interposition of a pulse current detector and pulse current control equipment, and to feed back the output thereof to the pulse current control equipment through the detection of the pulse current by the pulse current detector.

3,775,586

ENCLOSED LASER APPARATUS WITH REMOTE WORKPIECE CONTROL

Graham W. Flint, Maitland; William C. Hudson, Orlando; Thomas G. Crow, Orlando, and George R. Downes, Jr., Orlando, all of Fla., assignors to International Laser Systems, Inc., Orlando, Fla.

Filed Aug. 10, 1971, Ser. No. 170,464
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 L **4 Claims**



A welding apparatus for welding dental bridges, dental restorations, and the like, utilizing a laser beam for the welding, and including remote positioning of a prosthesis on a platform and direct viewing during the welding.

3,775,587

DEVICES FOR EVACUATION OF IMPURITIES FORMING IN WELDING PROCESSES

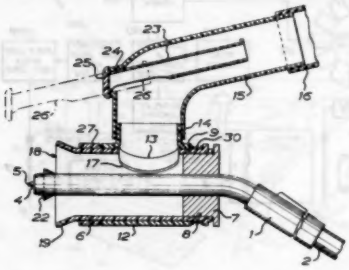
Erik Allan Lindkvist, Korpralsvagen 38, 902 53 Umea, Sweden

Filed Aug. 8, 1972, Ser. No. 278,761

Claims priority, application Sweden, Aug. 9, 1971, 10163/71

Int. Cl. B23k 9/32

U.S. Cl. 219—130 7 Claims



A device for evacuation of impurities forming in welding processes with supply of protective gas comprises a tube rotatably mounted on the welding tool and surrounding said tool clearance, said tube being provided at its front end portion with an intake opening and having a laterally projecting coupling piece which serves as a handle and is connected to a suction hose.

3,775,588

HEATED PRESS

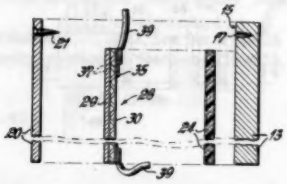
Hans-Joachim Niehenke, Hameln, Germany, assignor to Sinram & Wendt, Afferde, Germany

Filed Mar. 23, 1972, Ser. No. 237,263

Claims priority, application Germany, Mar. 27, 1971, G 71 11 819.9

Int. Cl. H05b 1/00

U.S. Cl. 219—243 17 Claims



A pants press has two press plates each having a rigid base plate and a pressure plate connected thereto. A heating element is interposed between the two latter plates and a heat insulator is provided between the heating element and the base plate.

3,775,589

STEAM GENERATOR WITH ELECTRICALLY HEATED BOILING CHAMBER

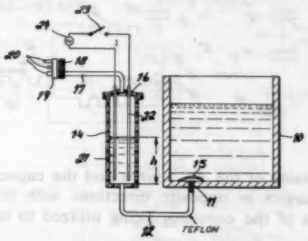
Nat Camp, 395 Westchester Ave., Portchester, N.Y.

Continuation-in-part of Ser. No. 11,986, Feb. 17, 1970, Pat. No. 3,619,559. This application Dec. 24, 1970, Ser. No. 101,309

Int. Cl. H05b 3/60; F22b 1/30

U.S. Cl. 219—284 3 Claims

An electrically heated steam generator is provided with a heating chamber having a water inlet and a steam outlet. A water reservoir is connected to the water inlet by a capillary conduit of polytetraflouroethylene (Teflon) whereby water is supplied to the chamber at a controlled rate consistent with the rate of steam discharge through the outlet. A pair of spaced electrodes are suspended within the heating chamber for heating the water therein. The capillary conduit has a bore



of a maximum diameter of substantially ⅛ inch and a length corresponding to a minimum resistance on the order of 10^5 ohms in the column of water within the bore, whereby leakage current between the heating chamber and reservoir is reduced to about 1 m A or less with a supply voltage of 110 V. applied to the electrodes.

3,775,590

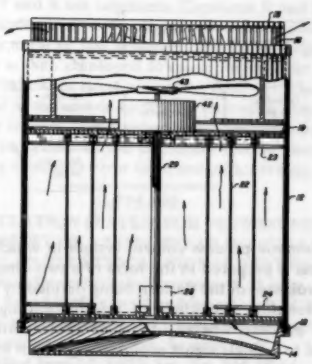
PORTABLE SPACE HEATER

William Joseph Gartner, Bartlett, Ill., assignor to William R. Steiner, and Richard P. Franklin, both of New Castle, Ind.

Filed Oct. 27, 1971, Ser. No. 193,058

Int. Cl. H05b 3/02; F24h 3/04

U.S. Cl. 219—366 6 Claims



A compact, portable, electric space heater has a convoluted heating element providing uniform heat over a large surface area enclosed in a shell having an air inlet and an air outlet. The convoluted heating element comprises an elongated heating strip having a conductive layer provided with elongated electrodes at the opposite longitudinal edges thereof. Mounting means in the form of a pair of open spider rings respectively engaging the opposite edges of the strip support the heating element within the shell. A high capacity blower is mounted on one of the rings for circulating air over the heating element. The heating element is at least two inches wide and has a resistance between about 20 to about 200 ohms per square.

3,775,591

OVEN HEATER ELEMENT CONTROL CIRCUIT

Robert R. Gould, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

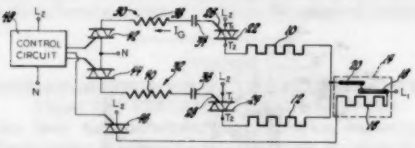
Filed Dec. 26, 1972, Ser. No. 318,012

Int. Cl. H05b 1/02

U.S. Cl. 219—501 2 Claims

A switching circuit for a heating element including a power triac in series with the heater element between one line of an

alternating current source and neutral. The power triac is controlled from a pilot triac connected in series with an RC network between the control electrode of the power triac and neutral. The pilot triac is triggered a short time interval after



the zero crossing of the AC source and the capacitor is alternately charged in opposite directions with the charge accumulation of the capacitor being utilized to trigger the power triac.

3,775,592

PROCESS CONTROL SYSTEM BY MEANS OF PATTERN RECOGNITION

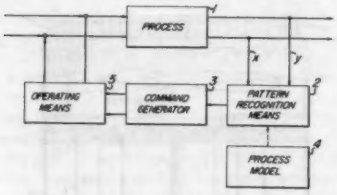
Masahisa Ando, and Kunihisa Hayashi, both of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Sept. 14, 1971, Ser. No. 180,292

Claims priority, application Japan, Sept. 18, 1970, 45/82396

Int. Cl. G06k *11/00*

U.S. Cl. 235—61.6 A **4 Claims**



An automatic process control system in which a model of the process is prepared in the form of a two-dimensional pattern, coordinates of the pattern being defined by two parameters representing two kinds of information signals derived from the process, whereby the two information signals are converted to a single signal representing a spot in the pattern, and on the basis of the single signal a set of control signals are produced through appropriate signal processing means to be fed back to the process.

3,775,593

AUTOMATIC FEE DETERMINING SYSTEM FOR PARKING GARAGES

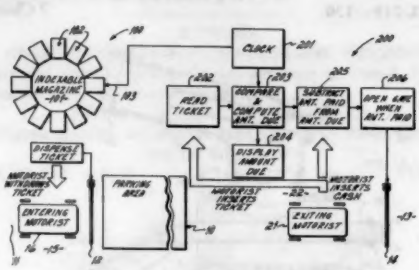
Carl K. Gieringer; Vernon T. Kleimeyer; Thomas J. Schinner, and Paul A. Singer, all of Cincinnati, Ohio, assignors to Cincinnati Time Recorder Company, Inc., Cincinnati, Ohio

Filed May 14, 1971, Ser. No. 143,300

Int. Cl. G08g *1/65*

U.S. Cl. 235—61.8 A **10 Claims**

A parking fee is automatically computed on the basis of elapsed time between the issuing of a ticket to a customer upon entry to the facility and the surrendering of the ticket by the customer upon departure from the facility. The tickets are in the form of reusable plastic cards embossed with permanent encoded information representative of a specified time interval during a given day. The customer is issued, upon entry to the facility, a ticket bearing information corresponding to his time of entry. A ticket dispenser having an indexable magazine with compartments corresponding to different periods of time throughout the day is sequentially indexed by a clock to issue the proper ticket at the proper time. Upon departure, the ticket is surrendered to a card reader which compares the time of surrender with the issue time encoded upon the card and a fee is displayed based on the computed elapsed time. Cash in the amount due when deposited at a pay station



adjacent the card reader opens the exit gate. The cards are embossed with bar coded information which is ready by scanning the underside of the card with feeler fingers which engage in the depressions of the underside of the code bars to advance switches to positions which decode the encoded information.

3,775,594

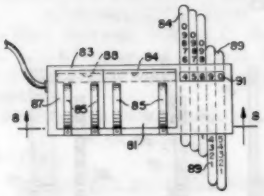
ENCODED IDENTIFICATION CARD SYSTEM

John F. Pasieka, and Charles B. Kennedy, both of Acton, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 9, 1970, Ser. No. 79,616

Int. Cl. G06k *7/14*; E04g *17/00*

U.S. Cl. 235—61.11 E **11 Claims**



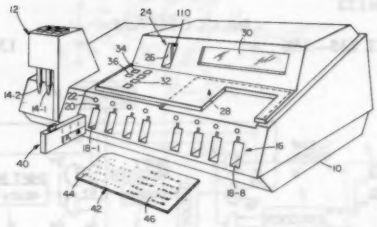
In an encoded identification card system including means to manufacture the card and means to read the card, the card is produced with a facial image on the card of the person identified by the card. The entire card is produced photographically by preparing a data card including alphanumeric data and encoded data. The data card is then photographed onto the identification card as is the facial image of the person to be identified by the card. The encoded data on the card comprises code patterns along a code track with a timing track containing timing marks indicating when the code track is to be read out. The readout system of the card comprises an optical scanner which scans the code and timing tracks and, in addition, optically scans variable input data provided by the operator of the readout system and fixed input data. The fixed input data is encoded on a second card in the same manner that the data is encoded on the identification card. The variable input data is encoded on slats which are slidable relative to one another and relative to the optical scanning mechanism to place different code patterns in the track of the scanner.

3,775,595

APPARATUS FOR PROCESSING CHEMICAL MATERIALS HELD IN CONTAINER STRUCTURES

Thomas A. Rosse, Lexington; David E. Blackmer, Harvard; Jerrold Zindler, Cambridge, and Thomas F. Kelley, Canton, all of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Division of Ser. No. 45,758, June 12, 1970, Pat. No. 3,703,336.
This application June 15, 1972, Ser. No. 263,285
Int. Cl. B01l 3/00; G01n 21/24; G06f 9/04
U.S. Cl. 235—61.6 H 12 Claims



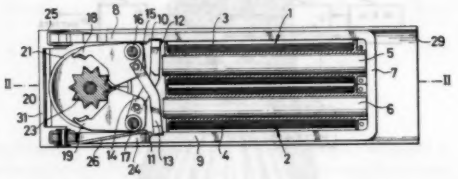
Incubation apparatus for use with a cuvette having a projecting processing control member and a plurality of chambers, at least one of which contains a stored chemical material includes a cuvette receptacle with adjacent heaters for incubating material in the cuvette, sensor circuitry responsive to the control member of the cuvette in the container receiving structure for producing an output signal as a function of the data provided by the control portion, and a timer responsive to the sensor circuitry for providing a control signal as an indication of the incubation of the cuvette. The receptacle also includes an interlock slot for receiving the projecting control member.

3,775,596

ELECTROMAGNETIC PULSE COUNTER

Alfred Zielke, Vohrum, Germany, assignor to Elmeg Elektro-Mechanik Gesellschaft mit beschrankter Haftung, Peine, Germany

Filed July 17, 1972, Ser. No. 272,326
Claims priority, application Germany, July 23, 1971, P 21 36 874.1
Int. Cl. G06m 1/08
U.S. Cl. 235—92 C 6 Claims



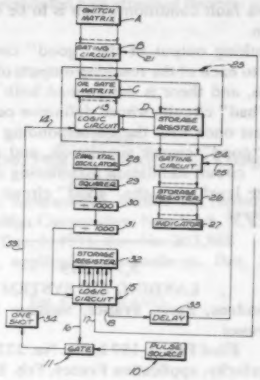
An electromagnetic pulse counter of the kind with two digit rollers which are rotatable about a common axis and each of which is adapted to be turned by one of two impulsion magnets through transmission elements cooperating therewith, the magnets being disposed one below the other and their armatures being pivotable about axes parallel to the axis of the digit rollers and having their free ends substantially in line with one another.

3,775,597

FLUID DENSITY DIGITAL COMPUTER

Milton H. November, Hacienda Heights, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,836
Int. Cl. G06f 15/56
U.S. Cl. 235—92 MT 13 Claims



Apparatus for producing a digital output from a storage register directly proportional to fluid density. A count down counter is preset to

$$STT_o/R$$

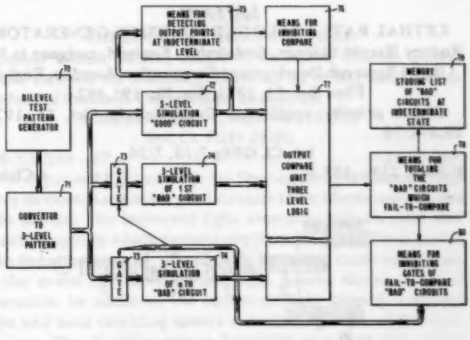
where S, T_o, T and R are constants. Constants R and S may be found empirically from a simple vibration densitometer test. Constant T is more or less arbitrary. The pulse output of the densitometer is then employed to cause the counter to count down for periodic time invariant gating intervals. The number in the counter at the end of each such interval is then entered in the storage register, this number being directly proportional to density. The system of the disclosure can be employed to reduce analog computer error to an insignificant magnitude.

3,775,598

FAULT SIMULATION SYSTEM FOR DETERMINING THE TESTABILITY OF A NON-LINEAR INTEGRATED CIRCUIT BY AN ELECTRICAL SIGNAL TEST PATTERN

Chester C. Chao, Poughkeepsie; Lawrence K. Lange, Wappingers Falls; Eric Lindbloom, Poughkeepsie, all of N.Y., and Anil D. Savkar, Annadale, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1972, Ser. No. 261,874
Int. Cl. G06f 11/00
U.S. Cl. 235—153 AC 11 Claims



A system involving the use of fault simulation for determining whether a proposed non-linear integrated circuit is testa-

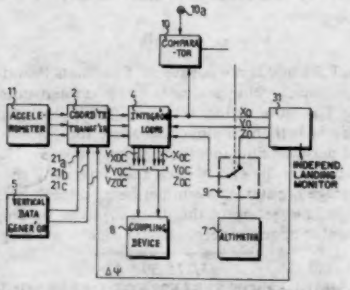
ble by a proposed incremental bilevel electrical signal test pattern. The system, which is particularly advantageous in determining the testability of integrated circuits having sequential logic, involves the conversion of the bilevel electrical test pattern into a corresponding three-level test pattern, and the application of said three-level pattern to a three-level "good" circuit simulation of the integrated circuit and to a number of three-level "bad" circuit simulations of said circuit, each of said "bad" circuit simulations being representative of a different stuck fault condition which is to be determined by the test pattern.

The resulting output of the "good" circuit simulation is compared to each of the resulting outputs of the "bad" circuit simulations, and there is determined both the proportion of the total "bad" circuits whose definitive outputs fail to compare at least once with the corresponding definitive outputs from the "good" circuit simulation, and the proportion of total "bad" circuit simulation manifesting an output at an indeterminate level when the "good" circuit simulation is at a definitive level.

3,775,599
LANDING AID SYSTEM

Robert Gendreu, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 2, 1972, Ser. No. 222,763
Claims priority, application France, Feb. 12, 1971, 7104821
Int. Cl. G06g 7/78
U.S. Cl. 235—150.22 **16 Claims**

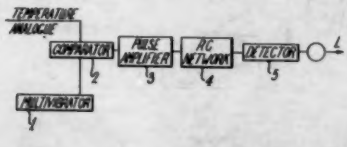


A landing aid system supplying accurate linear position information through comparison of rough information supplied by a conventional navigation system with information of similar nature obtained through integration of velocity or acceleration data supplied by a conventional on board data generator. Coordinate transformer, integrators and comparison loop are utilized for achieving said comparison and supplying said accurate information.

3,775,600
LETHAL RATE ANALOGUE FUNCTION GENERATOR

Rodney Harold Skinner, Godalming, England, assignor to National Research Development Corporation, London, England

Filed Oct. 21, 1971, Ser. No. 191,402
Claims priority, application Great Britain, Oct. 21, 1970, 50,072/70
Int. Cl. G06g 7/18, 7/26
U.S. Cl. 235—151.3 **4 Claims**

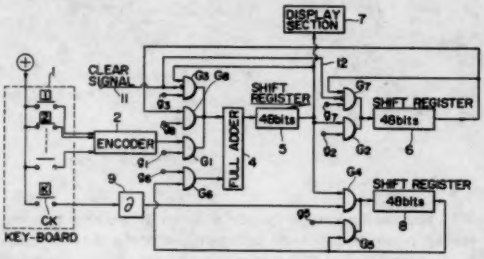


The invention concerns the sterilisation or pasteurising of substances such as foodstuffs. The effectiveness of a sterilising process is normally specified by a quantity called "the process lethality F." The invention provides an analogue function generator which calculates the lethality of a sterilising process from the temperature to which the substance being processed is subjected.

3,775,601
ARITHMETIC SYSTEM FOR USE IN ELECTRONIC CALCULATOR

Isao Hatano, and Akira Nagano, both of Kyoto-fu, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-fu, Japan

Filed Nov. 30, 1971, Ser. No. 203,346
Claims priority, application Japan, Nov. 30, 1970, 45/106122
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **13 Claims**

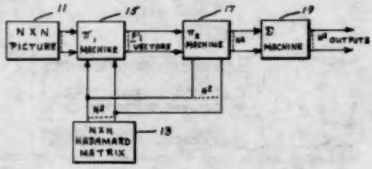


An arithmetic system for use in an electronic calculator including an additional register for storing a constant number which is used in an arithmetic calculation such as division, subtraction, addition and multiplication with respect to a series of arbitrary numbers. The content stored in the additional register is utilized only when the constant calculation is to be performed.

3,775,602
REAL TIME WALSH-HADAMARD TRANSFORMATION OF TWO-DIMENSIONAL DISCRETE PICTURES

Nikitas A. Alexandridis, and Allen Klinger, both of Los Angeles, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 29, 1972, Ser. No. 267,718
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **1 Claim**



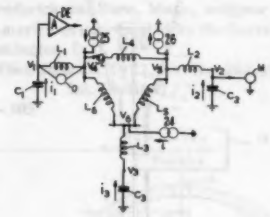
A method and system for a computer implementation of a digital Walsh-Hadamard transformation of a two-dimensional discrete N×N figure. The elements of an N×N Hadamard matrix and the elements of an N×N matrix representing optical densities of the figure are factors in a first multiplication operation producing a matrix consisting of a series of column vectors. This matrix is again multiplied by the N×N Hadamard stored matrix in a second multiplication operation and selected products are summed to complete the matrix multiplication, the output thereof being entries in the Walsh-Hadamard transform.

3,775,603
POWER SYSTEM SIMULATORS

John Desmond Ainsworth, Stafford, England, assignor to The English Electric Company Limited, London, England

Continuation-in-part of Ser. No. 74,540, Sept. 18, 1970, abandoned. This application July 11, 1972, Ser. No. 270,742
Claims priority, application Great Britain, Sept. 19, 1969, 46,224/69

Int. Cl. G06g 7/50
U.S. Cl. 235—185 10 Claims



This invention relates to a power system simulator which enables power system behaviour to be studied rapidly and resonably accurately. The apparatus comprises a network of components interconnected to form an analogue circuit of the system under investigation, the configuration of the network being identical to that of the system and the components employed being such that phase angle changes in busbar voltages are represented by voltages measured between selected points and power changes are represented by currents or rates-of-change of current in the circuit. The analogue circuit may be based on equations linearized with respect to an initial set of conditions; the inertias of the synchronous machines in the system may be represented in the analogue by capacitors, the reactance and damper winding effects of these machines by an auxiliary network of inductors and resistors, the reactances of lines and transformers by inductors alone, and d.c. links either by passive components, resistors, inductors etc. or operational amplifiers.

3,775,604
NOVELTY LAMP

Samuel M. Pambello, 316 Bloomfield St., Hoboken, N.J.

Filed May 24, 1971, Ser. No. 146,020
Int. Cl. F21p 1/02
U.S. Cl. 240—10 F 1 Claim

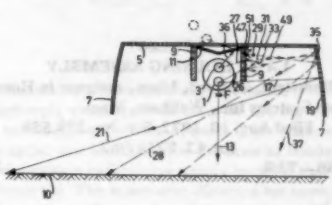
A novelty lamp depicting a character formed of a vertical translucent tube having an electric light bulb therein and having the facial features of the character painted on the upper portion of the tube, a sleeve surrounding the lower portion of the tube representing the body of the character and provided with a plurality of slits extending vertically between an upper and a lower solid band, the lower band is moveable along the tube and can be rotated on the tube to simultaneously change the appearance of the body of the character and the quantity of light emitted by the lamp, and a cap fitted to the upper end of the tube having simulated hair attached thereto.

3,775,605
LIGHTING FITTING FOR A U-SHAPED GAS DISCHARGE LAMP

Johannes Rijnders, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,568
Claims priority, application Netherlands, Dec. 17, 1970, 7018379

Int. Cl. F21s 3/02
U.S. Cl. 240—25 4 Claims



A lighting fitting which comprises a preferably U-shaped gas discharge lamp in which the space above the lamp is covered by a trough-shaped mirror, and a refractor plate and a reflector are arranged on either side of the lamp. This lighting fitting provides a street surface illumination the intensity of which varies uniformly over a wide area on either side of the elongate light source.

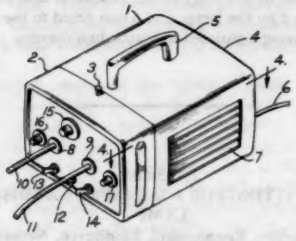
3,775,606
FIBER-OPTIC LIGHT CONSOLE

Seymour Bazell, Skokie; Ralph G. Ostensen, Morton Grove, and Edward M. Goldberg, Glencoe, all of Ill., assignors to Medical Products Corporation, Skokie, Ill.

Filed Jan. 7, 1972, Ser. No. 216,035
Int. Cl. F21v 29/00
U.S. Cl. 240—47 10 Claims

An improved light console for fiber-optic light cables which carry devices, such as surgical devices to be illuminated by the light source. The improved light source includes a dual illumination system which permits simultaneous use of two cables with the same console, or switching from one cable to another in the event of failure of one light source during surgical operation. In addition, the improved light console employs light and heat shielding means surrounding each of the light sources. The shielding means functions as a heat sink which may be air-cooled to protect the front portion of the console thereby preventing it from becoming too hot to touch, a serious defect in prior art consoles. The console also includes

means for controlling the light intensity for each of the light sources independent of separate color temperature controls. One embodiment of the light intensity means includes self-indexed, diaphragm or stop-type assembly which can vary the



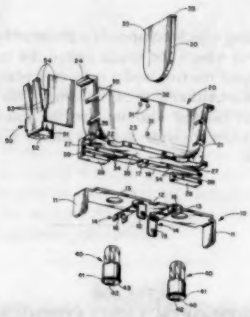
light intensity from 0 – 100 percent of output in any preselected number of discreet stages, typically 0, 25, 50 and 100 percent of maximum. Each light is separately switched independently of the power. The light console is air-cooled by a fan-type motor, and contains standard circuitry and fusing.

3,775,607

LAMP HOUSING ASSEMBLY

John W. Blomstedt, Bedford, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 10, 1972, Ser. No. 279,558
Int. Cl. F21s *1/02*
U.S. Cl. 240—73 R **16 Claims**



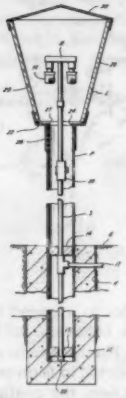
A lamp housing assembly, including a baseplate and two substantially identical molded members, for supporting light bulbs used in illuminating regions of a display panel. The two molded members are bonded together and the baseplate is removably attached to the bonded molded members. The bonded molded members are adapted to receive springs, which removably couple the lamp housing assembly to a display panel backplate. The lamp housing assembly can also be removably fastened to mounting strips by projections coupled to the baseplate. A plurality of lamps, secured in the lamp housing assembly by the baseplate provide continuous illumination in event of failure of one of the lamps. Removable partitions can be inserted in the lamp housing assembly, utilizing redundant light bulbs to illuminate separate areas of the display panel. Apertures are provided to ventilate the heat produced by the bulbs, while minimizing stray light.

3,775,608

SHOCK RESISTANT GAS LIGHT

Roger T. Shaper; John E. Germann, and J. Jerry Richardson, all of Houston, Tex., assignors to El Patio Products Corporation, Houston, Tex.

Filed July 15, 1971, Ser. No. 162,956
Int. Cl. F21v *15/04*; F21s *13/12*
U.S. Cl. 240—90 **2 Claims**



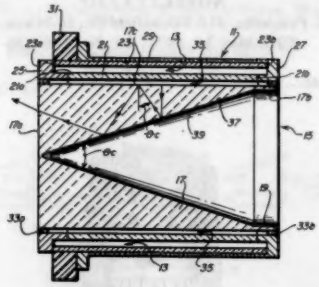
The present invention relates to a new and improved shock resistant pole mounted gas light for yard or patio use wherein the gas burner and mantle are supported independently of the supporting gas light pole to prevent accidental breakage of the mantle due to impact to the gas light support pole.

3,775,609

LAMP ARRANGEMENT

Milton Dank, Wyncote, Pa., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,421
Int. Cl. F21r *7/00*
U.S. Cl. 240—41.35 C **15 Claims**



A directed beam of intense light radiation is produced from a lamp arrangement having a vapor tube light source producing relatively less intense omnidirectional light radiation and having coaxial tubular walls with the inner tubular wall defining an axial region where the light is concentrated by a reflector surrounding the outer tubular wall. The concentrated light radiation is collected and transformed into a beam of greater intensity by a cylindrical light-transparent member located in the axial region and having reflector means on one end for causing the light to pass through the other end. The light-transparent member is spaced-apart from the inner wall of the light source and has an index of light refraction greater than a medium in the surrounding space so as to enable light passing through the transparent member to be reflected internally at

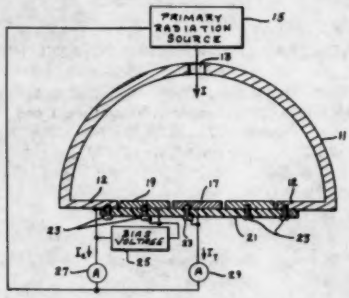
the cylindrical surface of the member. To provide substantially total internal reflection of light entering the transparent member normal to the axis thereof, the reflector means includes a conical portion extending axially inside the cylindrical transparent member, with an angle of revolution about the axis substantially equal to half the critical angle for total internal reflection inside the light-transparent member.

3,775,610

METHOD AND SYSTEM FOR SECONDARY EMISSION DETECTION

Arthur R. Frederickson, Stow, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 20, 1972, Ser. No. 264,695
Int. Cl. H01j *37/26*
U.S. Cl. 250—305 **4 Claims**



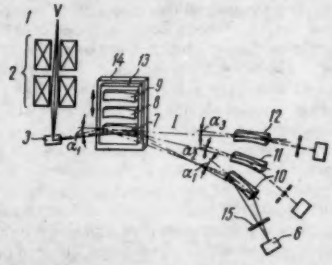
A triode secondary emission detector using a bias ring and a hemispherical collector for determining and discriminating yields of high and low energy secondary emissions. Primary radiation from a chosen source is directed through an opening located at the center of the curved surface of an emission collector in the shape of a hemisphere and bombards a metal target located at the center of the base of the hemisphere. A metal bias ring surrounds the target but spaced therefrom while a bias voltage source connects the bias ring to the collector. Current readings are obtained with a collector ammeter and a target ammeter both of which have a return path to the primary radiation source.

3,775,611

APPARATUS FOR SPECTRAL ANALYSIS OF SPECIMENS CONTAINING LIGHT-WEIGHT ELEMENTS

Alexandr Ivanovich Kozlenkov, ulitsa Fomichevoi, 9, kv. 51, and Vladimir Grigorievich Bogdanov, ulitsa Fersmana, 5, kv. 80, all of Moscow, U.S.S.R.

Claims priority, application U.S.S.R., June 6, 1969, 1328355
Continuation-in-part of Ser. No. 40,934, May 27, 1970, abandoned. This application July 24, 1972, Ser. No. 274,292
Int. Cl. G01n *23/22*
U.S. Cl. 250—49.5 PE **3 Claims**



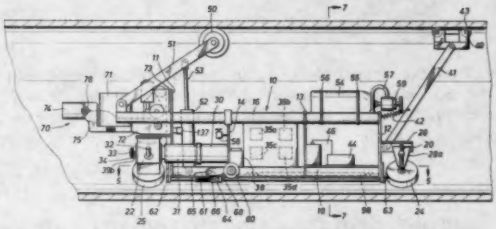
An apparatus for the X-ray spectral analysis of specimens containing light-weight elements comprises two mirrors of the same curvature and with the same reflecting coating. One of the mirrors is the entrance mirror and is placed in the path of the primary beam of X-rays excited in the specimen, while the other mirror is placed in the path of the radiation reflected from the entrance mirror. The two mirrors make equal angles with the radiation incident upon them.

3,775,612

PIPELINE X-RAY INSPECTION MACHINE

Robert D. Foster, and William K. Holleron, both of Houston, Tex., assignors to Monroe X-Ray Company, Monroe, La.

Filed Dec. 14, 1970, Ser. No. 97,769
Int. Cl. G01n *23/02*
U.S. Cl. 250—65 R **15 Claims**



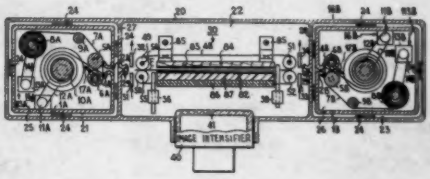
A pipeline crawler for inspecting pipe welds is driven by two motors drivingly connected to each of the driven wheels so that one motor can propel the crawler if the other motor fails. A radiographic unit is attached to the crawler frame for exposing and retracting a radioactive source in order that pipe welds can be inspected. The transverse distance between the wheels and the location on the crawler of the motors and batteries for the motors prevent the crawler from overturning as it moves through a pipeline.

3,775,613

FILM CHANGER FOR X-RAY DIAGNOSTIC APPARATUS USING BARE FILM SHEETS

Michel Hommerin, Paris, France, assignor to Cie Generale De Radiologie, Paris, France

Filed Apr. 5, 1972, Ser. No. 241,164
Claims priority, application France, Apr. 30, 1971, 7115609
Int. Cl. G03b *41/16*
U.S. Cl. 250—66 **2 Claims**



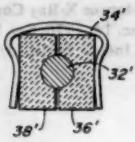
A film changer for X-ray diagnostic apparatus using bare film precut into sheets comprising three compartments, the middle one whereof making up the exposure and transfer section and the two lateral ones, containing two identical motor-driven electrically controlled magazines which are respectively and alternately used as a supply of unexposed film sheets and as a storage device for exposed undeveloped negatives.

3,775,614

THERMOLUMINESCENT RADIATION DETECTOR

Ray Winn, 33 Elm Street, Wakefield, and Joseph C. Ennis, 57 Topsfield Road, Ipswich, both of Mass.

Filed Dec. 14, 1970, Ser. No. 97,685
Int. Cl. G01t 1/11
U.S. Cl. 250—71 R 16 Claims



Radiation detector having a spring clip holding hot-pressed thermoluminescent chips in contact with a heater element welded to electrical leads passing through a glass envelope enclosing the same.

3,775,615

METHOD OF DETERMINING THYROID FUNCTION

Anna M. Eisentraut, Dallas, Tex., assignor to Nuclear-Medical Laboratories Inc., Dallas, Tex.

Filed July 6, 1971, Ser. No. 160,115
Int. Cl. G21h 5/02
U.S. Cl. 250—83 SA 15 Claims

An improved method is provided for measuring the total amount of thyroid hormone within a body fluid. The procedure includes an extraction step whereby thyroid hormone (thyroxine) is initially extracted from a blood sample by first diluting the blood sample from 1.5 to 6 times its initial volume with a nonionic aqueous diluent and thereafter extracting the thyroxine with a solvent such as alcohol. The extracted thyroxine is then combined with a known amount of thyrobinding globulin and a radioisotope labeled thyroid hormone to form an equilibrated solution. The free thyroid hormone is extracted from the resulting equilibrated solution with a particulate inorganic crystalline lattice sorbent material.

This invention relates to diagnostic tests for determining the level of thyroid hormone within a body fluid. In another aspect, this invention relates to an improved method for measuring total thyroid hormone within a body fluid. In a further aspect, this invention relates to an improved technique for extracting thyroid hormone from a blood serum sample.

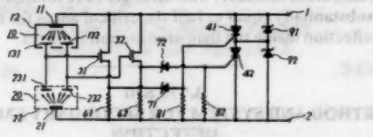
3,775,616

IONIZATION SMOKE DETECTOR

Hiroshi Tagashira, Sagamihara, and Katsutoshi Saito, Tokyo, both of Japan, assignors to Nittan Company Limited, Tokyo, Japan

Filed May 10, 1971, Ser. No. 141,712
Claims priority, application Japan, June 8, 1970, 45/49111; Aug. 27, 1970, 45/74532
Int. Cl. H01j 29/38
U.S. Cl. 250—83.6 FT 4 Claims

An ionization smoke detector having an open ionization chamber and a closed ionization chamber and each chamber includes a first electrode, at least two additional electrodes and a radioactive source. Corresponding additional electrodes of the chambers are interconnected while the first electrode of one chamber is connected to one terminal of a source of energy and the first electrode of the other chamber is connected to the other terminal of said source. A pair of field effect transistors have their bases individually connected to the junctions of each pair of connected additional electrodes and their source-drain paths including a load resistor connected between said source terminals. The voltage drop across each load resistor is then used to operate individual series connected switches.

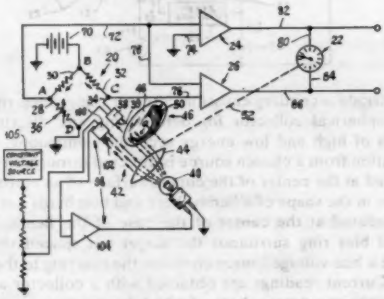


3,775,617

SERVO APPARATUS WITH PHOTOSENSITIVE DEVICE AND COMPENSATING CIRCUIT

Thomas A. Dubauskas, Waterbury, Conn., assignor to The Lewis Engineering Company, Naugatuck, Conn.

Filed Aug. 10, 1972, Ser. No. 279,679
Int. Cl. G01j 1/32
U.S. Cl. 250—205 9 Claims



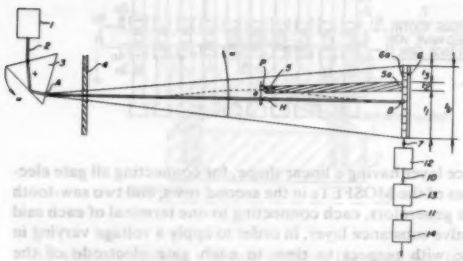
A servo-control apparatus for use with equipment having a servo feedback loop, comprising an electrically energized light-emitting means or lamp, a control photosensitive device having an expansive sensing surface exposed to a portion of the light from said light-emitting means, and a movable light-control member disposed in the path of said light to controllably intercept portions thereof and thus produce defined shadowed and illuminated areas on the said sensing surface. A compensating circuit is provided, for maintaining constant the output response of the control photosensitive device for various given fixed positions of the movable light-control member. The compensating circuit includes a second or compensating photosensitive device which is positioned out of the path of light intercepted by the movable member so as to receive continuous light or excitation from the lamp. This circuit further includes an amplifier having its input connected to the compensating photosensitive device and having its output connected to the lamp to thereby control the intensity of the latter. The compensating circuit operates to maintain constant the output response of the control photosensitive device for given fixed positions of the movable member by balancing out changes which would normally occur in said output response due to such things as temperature drift, aging of both the lamp and the control photosensitive device, etc. The compensating circuit also operates to balance out changes in the output response of the control photosensitive device due to variations in the light transmission medium, such as could arise from lens fogging, or the settling of dust or debris on the lamp surface.

3,775,618

METHOD AND APPARATUS FOR CHECKING AND/OR CORRECTING RAILWAY TRACKS

Robert Rousse, Lausanne, Switzerland, assignor to Cannon, Inc., Phillipsburg, N.J.

Filed Aug. 9, 1972, Ser. No. 279,082
Int. Cl. E01b 29/04; G06m 7/00
U.S. Cl. 250—209 12 Claims



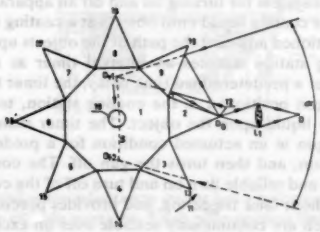
This invention is for a method and apparatus for checking and/or correcting a railway track by determining the position of a point P of said track relative to a reference plane containing a reference line defined by two points A and B situated respectively on either side of the normal dropped from point P onto said line, and wherein coherent rays passing through the point A are used to illuminate a target sensitive to there rays positioned at point B said rays being intercepted by a screen connected to point P whereof the shadow produced is projected onto the target B which is swept by rotating the laser beam about an axis parallel to the reference plane and passing through the point A and the target sweep time is measured and the position of point P relative to the reference line AB is determined by treating said sweep time.

3,775,619

DEVICE FOR COMPOSING AN INFRARED IMAGE

Arie N. De Jong, Pijnacker, Netherlands, assignor to Nederlandse Organisatie voor Toegepast Naturwetenschappelijk Onderzoch ten behoeve van de Rijksverdediging, The Hague, Netherlands

Continuation of Ser. No. 849,411, Aug. 12, 1969, abandoned.
This application June 4, 1971, Ser. No. 150,213
Claims priority, application Netherlands, Sept. 19, 1968, 6813387
Int. Cl. G01t 1/16
U.S. Cl. 250—347 5 Claims



The invention relates to a device for composing an infrared image, which device is provided with a rotating body for scanning the infrared object to be imaged, and for recomposing the visible image.

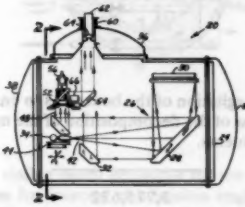
The rotating body comprises a disc with at least five abutting, outwardly reflecting roof-edge mirrors, regularly provided on the periphery of the disc.

3,775,620

RADIATION SOURCE SIMULATION MEANS

Rudolf H. Meier, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 24, 1972, Ser. No. 283,518
Int. Cl. G01t 1/16
U.S. Cl. 250—353 18 Claims



Advanced sensor evaluation and test apparatus comprises a vacuum chamber with an inner cryoshroud, housing an on-axis optical parabolic collimator, a radiant energy source assembly having an output aperture located in the focal plane of the collimator, a calibration monitor consisting of a Cassegrainian type radiometer that occupies one portion of the collimated radiant energy beam and which forms an image of the source on a bolometer, and a pair of scanning mirrors directing energy from another portion of the collimated beam into the entrance aperture of the optical sensor under test. In addition, a background radiant energy generator can direct radiant energy simulating elevated radiation background to the sensor under test which, in turn, forms an enlarged image of the background source in its own detector plane. One version of the source assembly includes at least one blackbody radiation source of variable aperture and temperature with a chopper operating to provide modulated radiation which is projected into an integrating sphere coupled with a source projector. An adjustable dual reflector with one specularly and one diffusely reflecting surface is mounted inside the integrating sphere and can be rotated to predetermined orientations to function in either a specularly reflecting mode or diffusely reflecting mode. In a third mode of operation, the mirror is rotated into an inactive orientation in which it does not intercept the beam entering the integrating sphere. This is the integrating sphere mode of operation. Another version of the source assembly includes at least one blackbody radiation source providing radiation to an integrating sphere coupled with a radiation guide (pipe). The radiation guide can be either a single or dual guide (pipe) and is cooperatively structured to operate with selected transmission patterns (transparent portions) on a movable disc sector positioned at the end of the guide.

3,775,621

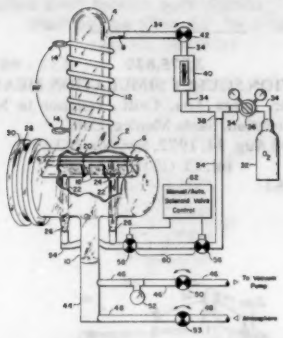
GAS REACTION APPARATUS

Georges J. Gorin, Berkeley, Calif., assignor to LFE Corporation, Waltham, Mass.

Filed Dec. 29, 1972, Ser. No. 319,872
Int. Cl. B01k 1/00
U.S. Cl. 250—531 5 Claims

Apparatus for inducing an efficient reaction between a gaseous plasma and a nongaseous material at relatively low

ambient temperatures. The reaction vessel includes means for supporting a sample dish or boat containing the material and



for enabling the agitation of the boat so as to enhance the rate and completeness of the decomposition of the material into its inorganic constituents.

3,775,622

DEVICE FOR THE SUPPRESSION OF REACTIONS INVOLVING UNDUE PRESSURE RISE IN LARGE-SIZE CONTAINERS

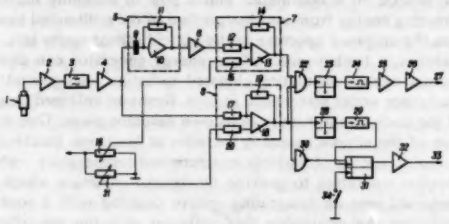
George Fredericks; Rudolf Zeiringer, and Kurt Wiederwohl, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Oct. 20, 1972, Ser. No. 299,405

Claims priority, application Austria, Nov. 4, 1971, 9537

Int. Cl. H01h *35/24*

U.S. Cl. 307—118 **7 Claims**



A device for the suppression of reactions involving undue pressure rise in large-size containers having an explosive or thermo-chemically reacting contents, comprising a pressure sensor exposed to the internal pressure of the container controlling a pressure relieving device via two parallel-connected contact assemblies, one of the contact assemblies responding to the transgression of a predetermined value of the internal pressure of the container and the second contact assembly responding to the transgression of a predetermined pressure rise per unit of time.

3,775,623

SEMICONDUCTOR DEVICE FOR SCANNING DIGITAL SIGNALS

Takamitsu Kamiyama, Kokubunji, and Mikio Ashikawa, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

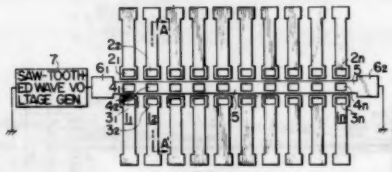
Filed Dec. 7, 1971, Ser. No. 205,629

Claims priority, application Japan, Dec. 7, 1970, 45/107565

Int. Cl. G11c *11/40*

U.S. Cl. 307—221 C **20 Claims**

A semiconductor device for scanning digital signals includes first and second rows each consisting of a plurality of MOSFETs having same threshold voltage V_{th}, electrical connecting means for connecting the drain electrodes of the MOSFETs in the first row to the source electrodes of MOSFETs in the second row, respectively, a first resistive substance layer having a linear shape, for connecting all the gate electrodes of the first row in series, a second resistive sub-



stance layer having a linear shape, for connecting all gate electrodes of the MOSFETs in the second rows, and two saw-tooth wave generators, each connecting to one terminal of each said resistive substance layer, in order to apply a voltage varying in value with respect to time to each gate electrode of the MOSFETs.

3,775,624

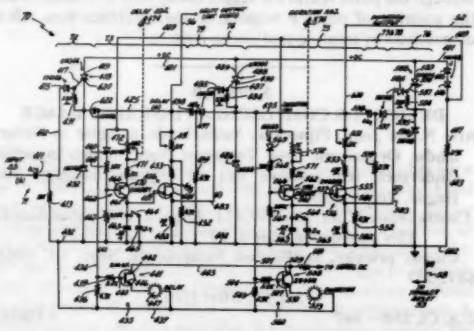
CONTROL CIRCUIT FOR GENERATING OUTPUT SIGNAL OF SPECIFIED DURATION AT SPECIFIED DELAY AFTER RECEIVING INPUT SIGNAL

Harvey R. Algeri, North Olmstead, and Robert E. Sandorf, Canton, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Division of Ser. No. 108,082, Jan. 20, 1971, Pat. No. 3,682,131. This application Apr. 5, 1972, Ser. No. 241,455

Int. Cl. H03k *17/26*

U.S. Cl. 307—293 **12 Claims**



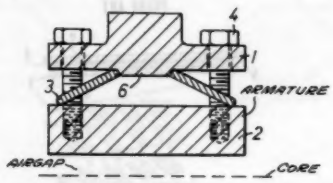
A control system for turning on and off an apparatus which discharges a coating liquid onto objects at a coating station. A sensor positioned adjacent the path of the objects upstream of the coating station initiates an interval timer as an object passes. After a predetermined time delay, the timer turns on a discharge gun positioned at the coating station, to begin to deposit the liquid upon the object. The timer maintains the discharge gun in an actuated condition for a predetermined time duration, and then turns the gun off. The control provides rapid and reliable turn on and turn off of the coating apparatus without false triggering, and provides precise time intervals which are continuously settable over an exceptionally wide range. The control utilizes a rapid reset hold and lock out circuit, SCR switches, unijunction relaxation oscillators having constant current charging circuits, an over voltage output circuit with short circuit protection, and means for programming the operation of plural discharge devices over different time periods.

3,775,625

ELECTROMAGNETIC VIBRATOR

Leo Brosch, Stetten; Gerd Fechner, Goppingen, and Eduard Reichert, Stuttgart-Rot, all of Germany, assignors to Transformatoren Union Aktiengesellschaft, Stuttgart, Germany

Continuation-in-part of Ser. No. 88,665, Nov. 12, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 303,823
Claims priority, application Germany, Nov. 15, 1969, P 19 57 585.0
Int. Cl. H02k 33/02
U.S. Cl. 310—19 10 Claims



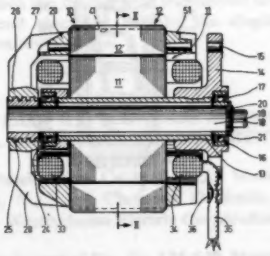
An electromagnetic vibrator wherein the armature is coupled to and supported on its associated mass by means of an adjustable coupling arrangement so that the armature and its mass are spaced from one another. A central disc spring element is arranged between the armature and the associated mass to bias these elements away from each other with a force sufficient to prevent relative movement between the armature and its associated mass. One or a plurality of disc springs may be used, and a guide means is generally provided on the mass for positioning the spring or springs. By adjusting the coupling means, and consequently the bias face exerted by the disc spring, the space between the armature and its associated mass is varied which simultaneously varies the operational air gap of the vibrator between the armature and its associated core.

3,775,626

EXTERNAL-ROTOR RELUCTANCE MOTOR

Martin Burgbacher, St. Georgen, Black Forest, Germany, assignor to Papst-Motoren KG, Georgen/Schwarzwald, Germany

Filed Jan. 27, 1972, Ser. No. 221,275
Claims priority, application Germany, Jan. 29, 1971, P 21 04 189.4
Int. Cl. H02k 19/14
U.S. Cl. 310—67 19 Claims



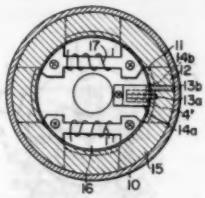
A external-rotor reluctance motor has a rotor provided with a plurality of pole portions. Each pole portion has respective pole ends, a pole span between said ends, and a pole middle. The rotor has a given effective yoke cross-section over part of a pole span and a lesser effective yoke cross-section in the vicinity of the respective pole middle and over substantial portions of the associated pole span. The novel reluctance motor exhibits greatly improved pull-in and pull-out torque.

3,775,627

IGNITION TIMING SIGNAL GENERATOR

Masao Nagasawa, Kariya, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed Apr. 28, 1972, Ser. No. 248,489
Claims priority, application Japan, Apr. 28, 1971, 46/34050
Int. Cl. H02k 9/00
U.S. Cl. 310—70 6 Claims



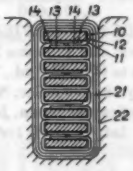
An ignition timing signal generator for use in a contactless ignition system for internal combustion engines is provided with a first and a second timing core disposed in the rotor of a magneto generator in the system and a magnetically shielded timing signal pickup means mounted on the stator of the magneto generator for generating an ignition timing signal when the pickup means is magnetically coupled to the timing cores.

3,775,628

INSULATED COIL FOR ARRANGEMENT IN A SLOT IN THE STATOR OR ROTOR OF AN ELECTRIC MACHINE

Anders R. Andersson; Anders Bjorklund, and Lars-Goran Virsberg, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed July 10, 1972, Ser. No. 270,439
Claims priority, application Sweden, Dec. 2, 1971, 15448
Int. Cl. H01f 27/32
U.S. Cl. 310—208 11 Claims



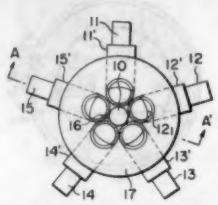
A coil positioned in the slot of a stator or rotor of an electric machine is formed of a bundle of conductors arranged close together and insulated from each other and from the slot. The conductor insulation consists of corona resistant insulating material running longitudinally of the conductor and surrounding the parts of the conductors facing the main insulation which surrounds the bundle of conductors and also overlies at least those part of the faces of the conductors which face the adjacent conductors which parts are situated nearest the tape facing the main insulation. The tape is formed of a linear unbranched or branched polymer having such thermal stability that the dielectric strength of a film of the polymer 50 microns in thickness, after ageing in air at 155°C for 25,000 hours, is at least 50 percent of the dielectric strength before the ageing and of mica in the form of small flakes.

3,775,629

COMMUTATOR FOR ROTARY MACHINE

Isao Kagami, Kanagawa-ken, Kawasaki-shi, Japan, assignor to Canon Kabushiki Kaisha and Kabushiki Kaisha Meguro Seiki Seisakusho, Tokyo, Japan

Continuation of Ser. No. 64,325, Aug. 17, 1970, abandoned.
This application Apr. 26, 1972, Ser. No. 247,899
Claims priority, application Japan, Aug. 20, 1969, 44/65814
Int. Cl. H02k 13/04
U.S. Cl. 310—235 4 Claims



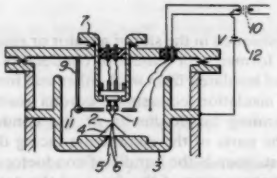
A commutator assembly mounted on a shaft for use with electrical rotary machinery having a plurality of round conductors with insulating coatings therearound overlaid around the rotary shaft, each of the conductors being disposed in parallel relationship with respect to the shaft and including a first portion facing towards the brush assembly of the machine, a second portion uprising from the shaft serving as the riser for electrical connection, and a third bent portion located therebetween, the number of conductors being selected depending upon the number of poles, and the diameter of the conductors being predetermined in order that the parallel portions are in close contact with adjacent conductors and with the shaft, the parallel portions having coaxially disposed surfaces void of insulating material so as to serve as commutator segments which may contact with the brush assembly; supporting means for securing the conductors to the shaft including a first portion made of an insulating material disposed in the spaces defined by the surfaces of the shaft and the adjacent conductors without covering the exposed surfaces of the conductors, and a second reinforcing portion made of insulating material for securing the bent portions to the shaft.

3,775,630

ELECTRON GUN DEVICE OF FIELD EMISSION TYPE

Yoshihisa Minamikawa, and Tsutomu Komoda, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 18, 1972, Ser. No. 272,809
Claims priority, application Japan, July 19, 1971, 46/53159
Int. Cl. H01j 1/42
U.S. Cl. 313—82 R 4 Claims



An electron gun device of the field emission type comprising an electron emitting cathode tip, a filament for heating the cathode tip, an anode, and a charged particle emitting electrode, in which charged particles are emitted from the electrode and bombard the anode surface to outgas the anode.

3,775,631

DISPERSION TYPE ELECTROLUMINESCENT ELEMENTS

Mitsuaki Morikawa, Mie Prefecture, Japan, assignor to Ise Electronics Corporation, Mie Prefecture, Japan

Filed Oct. 11, 1972, Ser. No. 296,559
Claims priority, application Japan, Oct. 11, 1971, 46/79991
Int. Cl. H01j 29/18
U.S. Cl. 313—108 A 2 Claims

PRIOR ART

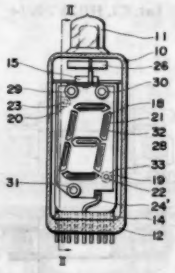
In a dispersion type electroluminescent element comprising a pair of electrodes and an electroluminescent layer sandwiched between the electrodes and including an electroluminescent phosphor dispersed in an organic or inorganic binder, the luminescent layer comprises a mixture of 100 parts, by weight, of an electroluminescent phosphor, 30 to 50 parts, by weight, of a liquid crystal and 10 to 40 parts, by weight, based on the sum of the parts of the electroluminescent phosphor and the liquid crystal, of an inorganic binder.

3,775,632

CONCEALED AUXILIARY CATHODE FOR FIGURE ILLUMINATING DISCHARGE TUBE

Hiroshi Toda, Tottori, Japan, assignor to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed June 9, 1971, Ser. No. 151,295
Claims priority, application Japan, July 8, 1970, 45/68744
Int. Cl. H01j 61/66
U.S. Cl. 313—109.5 14 Claims



A figure illuminating discharge tube having one common anode and a plurality of cathodes necessitated to illuminate one digit of the decimal number upon application of voltage to the anode and cathodes, which comprises means for effecting a glow discharge between the anode and any one of the cathodes with fairly quick efficiency as compared with the conventional tube of a similar character. To this end, an auxiliary cathode directly connected with a power source is provided for maintaining a glow discharge between such auxiliary cathode and the anode to emit ions within the tube.

3,775,633

COLD CATHODE DISCHARGE APPARATUS WITH MEMORY FUNCTIONS

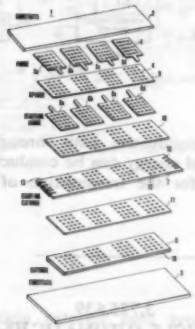
Rentaro Sasaki; Akinori Watanabe, both of Takasaki; Tatsuo Ogasawara, Tokyo, and Satoshi Watanabe, Gyoda, all of Japan, assignors to Oki Electric Industry Company Ltd. and Okaya Electric Industry Company, Tokyo, Japan

Filed Sept. 29, 1972, Ser. No. 293,573

Claims priority, application Japan, Sept. 30, 1971, 46/76701

Int. Cl. H01j *61/06*

U.S. Cl. 313—217 **8 Claims**



In a cold cathode ray discharge apparatus of the class comprising a first electrode acting as an anode, a plurality of second electrodes acting as cathodes, and an envelope containing the first and second electrodes and filled with a luminous inert gas, at least a portion of the envelope being transparent, there are provided insulator spacer means disposed between the first and second electrodes, the spacer means being provided with a plurality of perforations which form discrete discharge cells, a plurality of starting cathode electrodes disposed between the first and second electrodes, a plurality of starting anode electrodes disposed between the first electrode and the starting cathode electrodes and a plurality of resistors respectively connected to the second electrodes. Each ones of the second electrodes, the starting cathode electrodes, the starting anode electrodes cooperate with the first electrode and the spacer means to constitute a display unit. Responsive to a pattern signal an electric discharge is established between the starting anode and the starting cathode and then the discharge is transferred to between the first and second electrode thereby the display apparatus manifests a memory function.

3,775,634

ELECTRIC LAMP HAVING A BASE ASSEMBLY WITH INTEGRAL MEANS FOR AXIALLY-ORIENTING THE END CONTACT

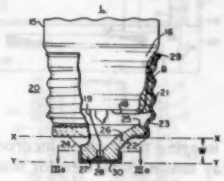
Richard F. Hasell, West Caldwell, N.J.; Walter A. Boyce, Glen Ridge, N.J., and Chrisman O. Smith, Paris, Tex., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 126,639, March 22, 1971, abandoned. This application Dec. 17, 1971, Ser. No. 209,300

Int. Cl. H01j *5/48, 5/60*

U.S. Cl. 313—318 **21 Claims**

The insulator portion of the base assembly is formed as a separate piece and mechanically locked to the metal shell by providing an inturned peripheral flange on one end of the shell and subsequently rolling a circumferential groove in the side wall of the shell which clamps the rim of the inserted insulator against the flange. The flange defines a transverse reference plane which insures that the axial length of the finished base assembly, and thus the "light-center-length" dimension of the lamp which is fitted with the base, are maintained within prescribed limits. The shell is stamped from sheet metal and the blank which is removed from the bottom wall to form the flanged end of the shell is fashioned into a contact member — preferably a hollow cap that is subsequently force-fitted onto the protruding end of the insulator in clamped engagement with one of the lamp leads during the basing operation and thus serves as the end contact for the finished lamp. The various stamping, rolling and force-fitting operations required to manufacture the base components and then assemble them with the sealed-in lamp are carried out by automated machines and permit the bases to be continously mass-produced without any manual labor. The inner edge of the cap is preferably protectively recessed within an annular channel in the insulator to provide a "tamper-proof" base structure. The use of a preformed insulator which is mechanically locked to the base shell also permits thinner shell material and various plated metals, such as brass-plated steel, to be used — thus further reducing the overall cost of the base and lamp.



3,775,635

POWER AMPLIFIER KLYSTRONS OPERATING IN WIDE FREQUENCY BANDS

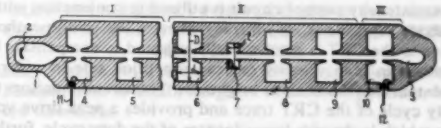
Georges Faillon, and Gerard Firmain, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 17, 1972, Ser. No. 281,272

Claims priority, application France, Sept. 16, 1971, 7133392

Int. Cl. H01j *25/10*

U.S. Cl. 315—5.43 **2 Claims**



Klystrons of the invention comprise resonant cavities tuned to frequencies higher than the maximum frequency of the frequency band B of operating in order to improve the efficiency at frequencies higher than the centre frequency Fo of the band B, and harmonic cavities tuned to frequencies slightly below the frequency 2 Fo - B, in order to improve the efficiency at frequencies of less than Fo.

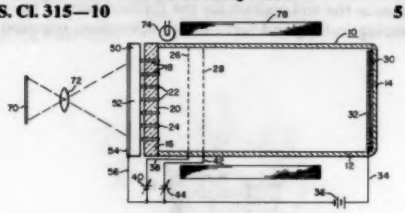
Wide-band improved klystrons of this kind can be used for operation within wide power ranges and even at relatively low powers, for example some few hundreds of killowatts.

3,775,636

DIRECT VIEW IMAGING TUBE INCORPORATING VELOCITY SELECTION AND A REVERSE BIASED DIODE SENSING LAYER

Frank X. McNally, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1971, Ser. No. 155,080
Int. Cl. H01j 31/26
U.S. Cl. 315—10 5 Claims



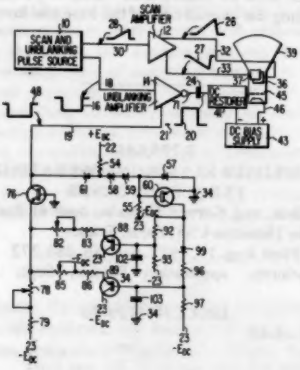
A direct view imaging tube which incorporates a reversed biased diode array sensing structure for sensing input radiation to modulate a velocity selection type image section.

3,775,637

CATHODE RAY DISPLAY INTENSITY CONTROL CIRCUIT

Thomas Joseph Brady, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,725
Int. Cl. H01j 29/70
U.S. Cl. 315—22 2 Claims



An intensity control circuit is utilized in conjunction with a cathode ray tube (CRT) display wherein the grid-to-cathode drive to the CRT is automatically adjusted to compensate for changes in scan velocity or scan repetition rate in order to maintain a constant trace brightness. The circuit monitors the duty cycle of the CRT trace and provides a peak drive voltage which is the non-linear inverse of the duty cycle, further modified to account for the non-linear grid beam current characteristic of cathode ray tubes.

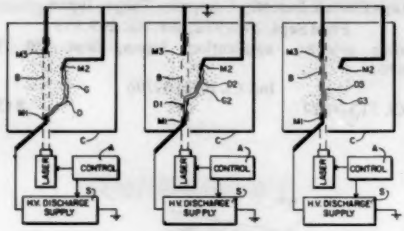
3,775,638

ESTABLISHING HIGHLY CONDUCTIVE PATH IN GAS BY THERMAL GUIDANCE OF DISCHARGE

Derek A. Tidman, Silver Spring, Md., assignor to Versar Inc., Springfield, Va.

Filed Mar. 27, 1972, Ser. No. 238,506
Int. Cl. H02h 7/24; B23k 27/00; H01s 3/00
U.S. Cl. 315—36 18 Claims

The apparatus and methods in which a laser beam or other light source of comparable steradiancy is employed to establish an initial low-density rarefaction trail through a gas medium by expanding the gas within the trail to a lower density, and then discharging an auxiliary high voltage source therethrough to ionize that initial trail to a high level, whereby to form a highly conductive path through which useful amounts of electrical energy can be conducted in a straight line, for instance, for the transmission of intelligence or power.

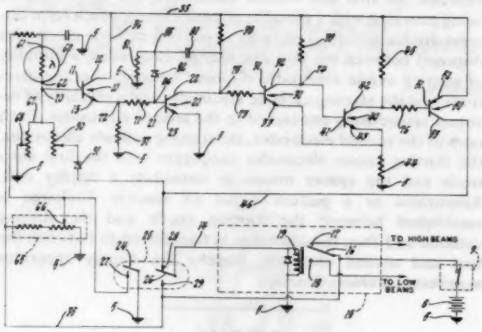


3,775,639

MOTOR VEHICLE AUTOMATIC HEADLAMP SWITCHING SYSTEM

Myrneth L. Woodward, Lapel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1972, Ser. No. 286,307
Int. Cl. B60q 1/14
U.S. Cl. 315—83 3 Claims



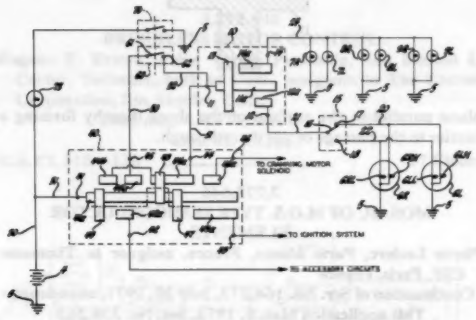
A motor vehicle automatic headlamp switching system for automatically switching the headlamps between the high and low headlamp beams. Upon the illumination of a light sensitive element, associated control circuitry energizes the operating coil of an electrical relay which switches the headlamps from the high headlamp beams to the low headlamp beams. When the light sensitive element is no longer illuminated, the control circuit automatically deenergizes the operating coil of the electrical relay which switches the headlamps from the low headlamp beams to the high headlamp beams. Included in the control circuit is a delay circuit which prevents the control system from switching the headlamps from the high headlamp beams to the low headlamp beams upon the illumination of the light sensitive element by only short flashes of light.

3,775,640

MOTOR VEHICLE EXTERIOR LIGHT SYSTEM CONTROL CIRCUIT

James H. English, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1972, Ser. No. 295,923
Int. Cl. B60q 1/14
U.S. Cl. 315—83 2 Claims



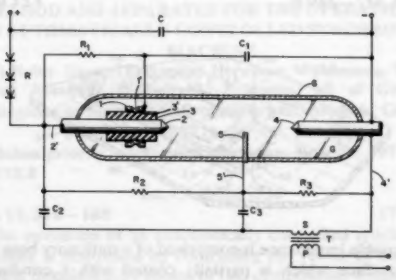
A motor vehicle exterior light system control circuit wherein the ungrounded terminal of the vehicle battery is connected to the input terminal of an ignition switch of the type operable to respective positions in which the input terminal is electrically connected to an accessory circuit and an exterior light system circuit output terminals, to an auxiliary circuit output terminal, to only the exterior light system circuit output terminal and to an ignition circuit and the exterior light system circuit output terminals. The exterior light system circuit output terminal of the ignition switch is connected to the input terminal of a conventional headlamp switch of the type operable to positions in which the input terminal is electrically connected to output terminals to which one side of the filaments of the exterior lighting system electrical lamps may be connected. To provide an override feature, the auxiliary circuit output terminal of the ignition switch may be connected to the input terminal of the headlamp switch through a conventional single pole-single throw electrical switch.

3,775,641

METHOD OF AND APPARATUS FOR FLASH DISCHARGE

Jacob Goldberg, Cambridge, Mass., assignor to United States Scientific Instruments, Inc., Watertown, Mass.

Filed May 30, 1972, Ser. No. 254,776
Int. Cl. H05b 41/16
U.S. Cl. 315—261 8 Claims



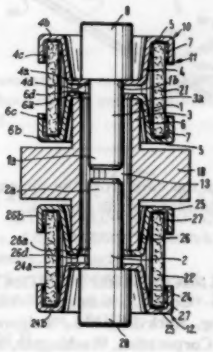
This disclosure is concerned with increasing the reliability of triggering a discharge between a pair of electrodes in a gas-discharge tube or the like, by generating, apart from the triggering, an intense electric field adjacent one of the electrodes (but outside the discharge region), while substantially inhibiting arcing during such generation.

3,775,642

GAS DISCHARGE EXCESS VOLTAGE ARRESTER

Gerhard Lange, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 30, 1971, Ser. No. 203,277
Claims priority, application Germany, Jan. 25, 1971, G 71 02 611.4
Int. Cl. H02h 3/22
U.S. Cl. 317—61.5 6 Claims



A compact highly efficient multipath gas discharge type excess voltage arrester comprises first and second axially aligned electrodes projecting in opposite directions through a metallic end cap means to a point wthin a tubular third electrode. The metallic end caps are each constructed of a pair of axially aligned oppositely disposed first and second dished members which each have a facing groove receiving an insulating ring member in sealing relation. The walls of the frusto conical dished members serve to protect the insulating ring from metallic electrode vapors. The metallic end cap means close opposite ends of a tubular third electrode means to form the gas discharge tube. Contact members of the first, second and third electrodes extend beyond the ends and circumference respectively, to provide additional protection for the end caps and insure structural integrity of the arrester.

3,775,643

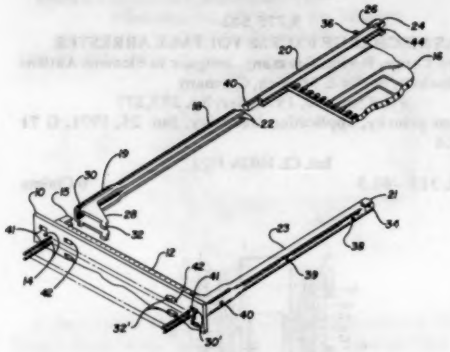
SUPPORT ASSEMBLY FOR PLUGGED-IN PC CARD COMPRISING SELF-MOUNTABLE CHANNELS WITH PLASTIC LINERS

Stanley Schachnow, Torrance, and Frederick J. Siegler, Santa Monica, both of Calif., assignors to Elco Corporation, Willow Grove, Pa.

Filed Feb. 8, 1972, Ser. No. 224,464
Int. Cl. H05k 7/18
U.S. Cl. 317—101 DH 7 Claims

A support assembly for a printed circuit (PC) module card comprises a pair of elongated metal channels and respective thermoplastic liners. One end of each channel is mounted around the respective end of a plate-mounted cardedge receptacle by means of guide and locking fingers which extend through apertures in the plate and lock the channel thereto. The rest of the channel extends upwardly to provide an insertion guide and mounting support for "tall" module cards. The lower end of each liner is inserted between the bottom portion of the channel and the end of the receptacle to rigidify the channel. Near the top of each liner is a boss which fits into a mating hole in the channel and at the upper end of each liner

is a shoulder which mates with a respective shoulder on the channel, thereby releasably to lock the liner to the channel.



The liner insulates the card from the channel and insures a tight fit between the card and the channel.

3,775,644

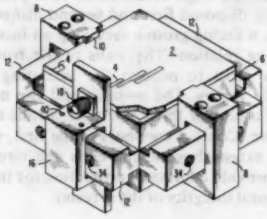
ADJUSTABLE MICROSTRIP SUBSTRATE HOLDER

Calvin Buchanan Cotner, Arlington, Va., and Arthur Frederick Standing, Rockville, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Sept. 20, 1972, Ser. No. 290,668

Int. Cl. H05k *1/64*

U.S. Cl. 317—101 CC **10 Claims**



An adjustable substrate holder comprising a rectangular frame for holding at least one microstrip substrate for testing. Rails are connected to the frame along its outer edges for slidably mounting substrate clamps and electrical connector brackets. A plurality of frames may be mounted side-by-side with extended rails to hold the frames together, to accommodate an equal plurality of substrates. In such a case, the substrates are butted together and electrically interconnected by a bond across them. A continuous ground plane is formed under the substrates when two or more substrates are butted together.

3,775,645

HEADER ASSEMBLY

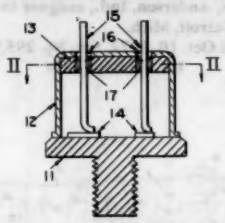
Thomas F. McCarthy, 23 Centre St., Waltham, Mass.

Filed Aug. 8, 1972, Ser. No. 278,809

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 A **4 Claims**

A semiconductor header assembly is provided which can be hermetically sealed and which will be impermeable to gas leakage. The assembly includes a shell formed by stamping from a metallic sheet having its grain boundaries lying in a plane parallel to the surface of the sheet thereby forming a barrier to the passage of gas therethrough.



3,775,646

MOSAIC OF M.O.S. TYPE SEMICONDUCTOR ELEMENTS

Pierre Leclerc, Paris 16eme, France, assignor to Thomson-CSF, Paris, France

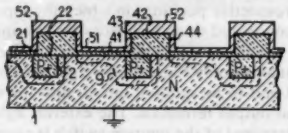
Continuation of Ser. No. 164,273, July 20, 1971, abandoned.

This application Mar. 5, 1973, Ser. No. 338,263

Claims priority, application France, Aug. 7, 1970, 70029261

Int. Cl. H01l *15/00, 11/14*

U.S. Cl. 317—235 R **6 Claims**



A metal matrix of photo-M.O.S. devices, transparent to radiation is provided. A gate is associated with each of the collectors of the matrix. Said gate overlaps partly onto the associated collector. The other part of the collector is covered by a layer of insulating material and a thick layer, connected to the gate of the neighbouring element of the same line in a plane located between the two collectors. The collectors of one and the same column are electrically connected. The gates of one and the same line are electrically connected.

3,775,647

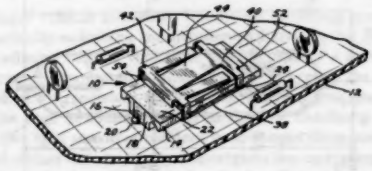
VARIABLE IMPEDANCE

Jack L. Bowen, Waseca, Minn., assignor to E. F. Johnson Company, Waseca, Minn.

Filed Aug. 21, 1972, Ser. No. 282,446

Int. Cl. H01g *5/04*

U.S. Cl. 317—249 R **12 Claims**



A variable impedance is comprised of a stationary base having a surface which is partially coated with a conductive material to form a first element of the variable impedance. A slidable base is mounted for longitudinal movement on the stationary base. The slidable base includes conductive biasing

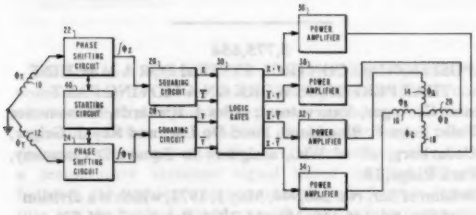
members to bias a second element of the variable impedance carried thereby, to engage the first element on the stationary base. One of the elements is comprised of suitable impedance material for the variable impedance range desired and includes an electrically conductive top surface. The slidable base includes an electrically conductive portion to form a sliding electrical contact with a conductive electrode on the stationary base so that the impedance may be varied by moving the slidable base longitudinally on the stationary base.

3,775,648

BRUSHLESS MOTOR CONTROL

Eugene C. Brown, Palos Verdes Peninsula, and Donald L. Carter, Torrance, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 4, 1971, Ser. No. 168,807
Int. Cl. H02p *7*
U.S. Cl. 318—138 **17 Claims**



A brushless DC motor control system is provided in which auxiliary sense windings within the stator portion of the motor derive reference signals in response to rotation of the rotor. The reference signals are shifted in phase by a predetermined amount and shaped to provide generally rectangular waveforms prior to having the true and complementary values thereof combined by logical gating circuitry so as to selectively gate a plurality of power amplifiers which are associated with and which energize different ones of the main motor or stator windings. In the particular embodiment disclosed the reference signals are delayed 90° so as to be in-phase with selected pairs of the main motor windings and thereby establish a correct sequence of logical gating for the power amplifiers when the motor is rotating in one direction. The reference signals as delayed 90° are out-of-phase with certain pairs of the main motor windings to prevent rotation of the motor in the opposite direction. A starting circuit provides acceleration of the motor in the desired direction from rest or from a stalled condition by providing artificial reference signals which are gated to the power amplifiers to provide energization of the main windings on a random basis.

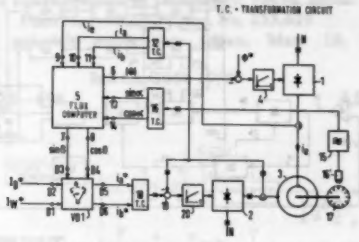
3,775,649

METHOD AND APPARATUS FOR THE OPERATION OF AN AUTOMATICALLY CONTROLLED SYNCHRONOUS MACHINE

Karl-Heinz Bayer, Erlangen; Hermann Waldmann, Welher, and Manfred Weibelzahl, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 27, 1972, Ser. No. 266,643
Claims priority, application Germany, June 29, 1971, P 21 32 178.8
Int. Cl. H02p *7/36*
U.S. Cl. 318—188 **17 Claims**

The operation of an automatically controlled synchronous machine is controlled by controlling the vector of the stator current circulation by means of two components which can be varied independently of each other. One of these components, namely, the torque-generating component, is always perpendicular to the axis of the rotating field, and the other, the field-generating component, always parallel to the axis of the rotating field. In a drive of this type, which is particularly well



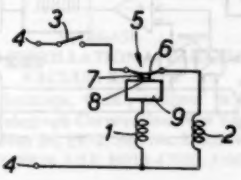
suited for a transmissionless cement mill, full torque at standstill, starting without chatter and full utilization at rated operation are obtained.

3,775,650

THERMAL STARTING DEVICE FOR A SINGLE-PHASE ASYNCHRONOUS MOTOR

Fleming Thorsoe, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 684,664, Nov. 21, 1967, abandoned. This application Aug. 14, 1970, Ser. No. 63,941
Int. Cl. H02p *1/44*
U.S. Cl. 318—221 H **2 Claims**



The invention relates to single phase asynchronous motors in which a bimetal switch for opening the auxiliary circuit is in the circuit of the main winding of the motor. The bimetal switch is initially caused to open the auxiliary circuit by heat produced in a heating resistor in the auxiliary circuit. The bimetal switch is caused to remain open during operation of the motor by heat produced in the bimetal switch by reason of the current for the main circuit being directed through the bimetal switch.

3,775,651

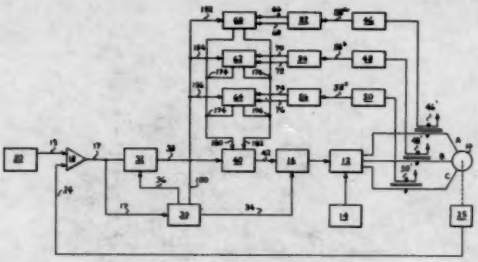
POWER SYSTEM OVERCURRENT PROTECTION MEANS UTILIZING VOLTAGE ADJUSTMENT

Carlton Eugene Graf; Einar Aasen Skogsholm, and John Gaylor Tracy, all of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Dec. 17, 1971, Ser. No. 209,463
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **17 Claims**

The actual electric current transmitted between a source of variable voltage electric power and an electric motor connected thereto is continuously monitored and utilized to generate a first control signal in response to a motoring current equal to or greater than a predetermined level and a second control signal in response to a regenerative current equal to or greater than a predetermined level. A regulator is

responsive to the first control signal to reduce the output voltage of the electric power source and to the second control



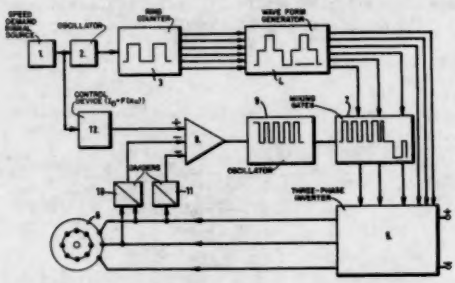
signal to increase the output voltage of the power source, the result being a rapid reduction in the actual current.

3,775,652

SPEED CONTROLS FOR ELECTRIC MOTORS

Peter Bowler, Sale, and Benjamin Nir, Cheadle, both of England, assignors to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Jan. 6, 1972, Ser. No. 215,715
Int. Cl. H02p 5/40
U.S. Cl. 318—227 3 Claims



The torque of an induction motor is regulated by feedback of parameters of power supplied to the motor in an open-loop control system. The parameters may be frequency with voltage and current or frequency with impedance. With feedback of voltage and current the control system is arranged so that the voltage feedback predominates in regulating motor torque at high motor speeds and the current feedback predominates at low motor speeds enabling the ratio of no-load to rated-load motor speed to be controlled to be substantially constant for all motor speeds.

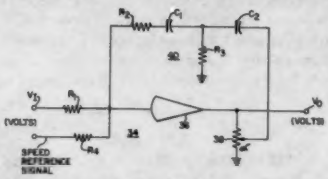
3,775,653

PROPORTIONAL INTEGRATOR SQUARED (PI) 2 SPEED CONTROLLER FOR UTILIZATION IN A SPEED REGULATOR SYSTEM

Robert S. Peterson, and Melvin A. Hensleigh, both of Williamsville, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1973, Ser. No. 324,054
Int. Cl. H02p 5/16
U.S. Cl. 318—326 5 Claims

A speed controller for utilization in a speed regulator system for a d.c. motor. An operational amplifier receives a voltage V_1 through a first resistor R_1, the voltage V_1 being a function of the instantaneous speed of the d.c. motor. A second input to the operational amplifier is a speed reference signal. A feedback path connects the first input resistor R_1 with an adjustable portion α of the amplifier output Vo. The feedback path includes a second resistor R_2 serially with capacitors C_1 and C_2; a third resistor R_3 is connected between



the union of capacitors C_1 and C_2 and ground. The speed controller is a proportional integrator squared $(PI)^2$ having the Laplace transfer function:

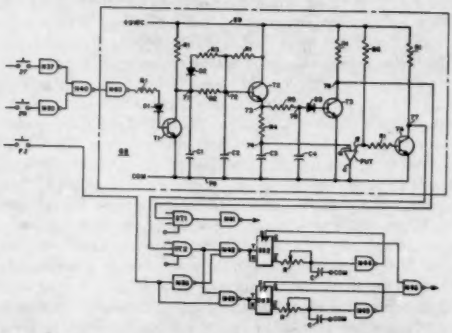
$$\frac{Vo}{V_1}=\left[\frac{R_2C_1S+1}{\alpha C_1R_1}\right]\left[\frac{R_3(C_1+C_2)S+1}{C_2R_3S}\right]$$

3,775,654

POSITIONING CONTROL SYSTEM FOR A MACHINE THAT PERFORMS WORK ON A MOVING PART

Ernest G. Anger, Yaurvatosat; Giles J. Richards, Menomonee Falls; John F. Bloodgood, Fond Du Lac, and Roy J. Geiger, Cedarburg, all of Wis., assignors to Square D Company, Park Ridge, Ill.

Division of Ser. No. 248,944, May 1, 1972, which is a division of Ser. No. 146,110, May 24, 1971, Pat. No. 3,686,556.
Filed Nov. 29, 1972, Ser. No. 310,299
Int. Cl. G05b 11/28
U.S. Cl. 318—599 3 Claims

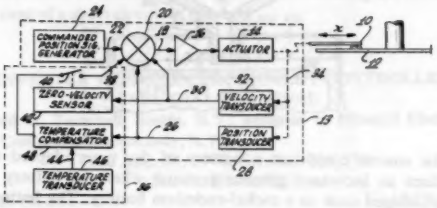


A programmable and manually operable control system for controlling the position of a machine relative to a workpiece so the machine may perform work at various locations on the workpiece while the workpiece is moved by the conveyor. The system includes a pair of synchro resolvers which provide output signals indicative of the position of the machine relative to a datum position and a pair of synchro resolvers which provide output signals indicative of the position of the conveyor relative to the datum position. The outputs of the machine indicating resolvers provide the inputs to the conveyor indicating resolvers and the outputs of the conveyor indicating resolvers are compared with command signals that are generated by a continuously recycling counter which has been preset by signals from a memory so the displacement between selected locations on the workpiece and the machine is electrically measured without using differential mechanical gearing. The control system is arranged so the machine will move synchronously with the workpiece, independently of the workpiece, and synchronously with the workpiece while the machine is moving from one preprogrammed location to a new preprogrammed location on the workpiece.

3,775,655
METHOD AND APPARATUS FOR TRANSDUCER TEMPERATURE COMPENSATION

Wilbur E. Du Vall, Redondo Beach, Calif., assignor to Xerox Corporation, Rochester, N.Y.

Filed Sept. 15, 1972, Ser. No. 289,447
Int. Cl. G05d 23/275
U.S. Cl. 318—634 13 Claims

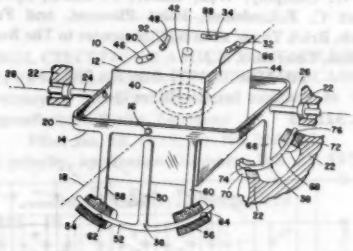


Method and apparatus for compensating a position servomechanism for errors introduced by differences in coefficients of thermal expansion between a transducer element and a positioned element. A position displacement signal based on distance from a center position on the transducer element and a temperature variation signal based on the difference between the ambient temperature and a reference temperature are multiplied together with appropriate constants to generate an error signal which is applied to the servomechanism to correct the final position.

3,775,656
PLATFORM STABILIZATION SYSTEM

Gleason Romans, Tulsa, Okla., assignor to Aviation, Inc., Tulsa, Okla.

Filed May 22, 1972, Ser. No. 255,676
Int. Cl. B64c 17/06
U.S. Cl. 318—649 11 Claims

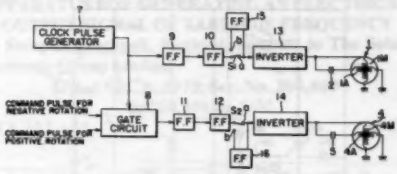


A platform stabilization system to be carried by a movable vehicle comprising gimbal means operably connected between the vehicle and the platform to provide two degrees of rotational freedom of the platform with respect to the vehicle, electromagnetic erection means to effect platform erection, sensing means secured to the platform for determination of unlevel conditions and electronic control means operably connected between the sensing means and the erection means, whereby upon the sensing of any out-of-level condition of the platform, the sensing means provides an electrical power to create an electromagnetic field in the erection means thereby effecting erection of the said platform to a level condition. The platform stabilization system may also be used for erection of a gyroscope stabilized platform.

3,775,657
METHOD AND DEVICE FOR DRIVING STEP-BY-STEP ELECTRICAL ROTARY MACHINE

Hiroyaki Takai, Kawasaki; Kensuke Hasegawa, Yokohama, and Michio Nakano, Tokyo, all of Japan, assignors to President of Tokyo Institute of Technology, Tokyo, Japan

Filed Mar. 10, 1972, Ser. No. 233,619
Claims priority, application Japan, Mar. 18, 1971, 46/15879
Int. Cl. G05b 19/40
U.S. Cl. 318—696 6 Claims

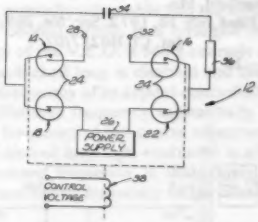


An electrical rotary machine comprising a stator and a rotor may be used as a step motor when the outputs of a digital phase modulator comprising a clock pulse generator and pulse number reducing circuits each comprising a chain of flip-flops connected in series are applied to the stator and the rotor windings through an inverter respectively to generate the rotating magnetic fields. In response to a number of rotation command pulses to be inserted in a clock pulse train from the clock pulse generator and to a manner by which the command pulses are inserted into the clock pulse train, a number of steps and the direction of rotation of the rotor can be controlled. The angle of rotation of the rotor in response to one command pulse may be varied by varying a number of series-connected flip-flops in the pulse number reducing circuit.

3,775,658
CAPACITIVE FIBRILLATION APPARATUS USING VACUUM RELAYS

Floyd D. Miles, Saratoga, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 30, 1972, Ser. No. 258,054
Int. Cl. H03k 3/53; H01h 47/00, 3/00
U.S. Cl. 320—1 1 Claim

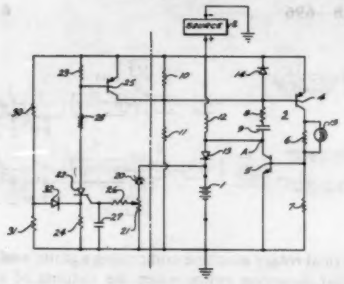


A vacuum relay system for alternately switching a charging capacitor between a load and source of voltage. A pair of normally open contacts and a pair of normally closed contacts are provided. Actuation of a solenoid member causes an actuating rod to move in a direction which causes movement of a cross bar member. The cross bar member has an actuating bar member secured at each of its ends which moves in the same direction as the actuating rod. Movement of the actuating bar members causes a pair of normally open contacts to close and simultaneously causes a pair of normally closed contacts to open. The contacts are each individually surrounded in a vacuum environment wherein failure of the vacuum environment surrounding any of the normally open or closed contact members does not affect the vacuum environment of the other contact members.

3,775,659
BATTERY CHARGER

George David Carlsen, II, Playa Del Rey, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed June 9, 1971, Ser. No. 151,447
Int. Cl. H02j 7/10
U.S. Cl. 320—21 6 Claims

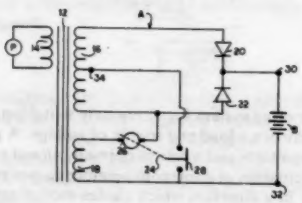


A battery charger for charging batteries that may have a nominal rated voltage equal to or greater than the voltage of the source, includes an accumulator of energy such as an inductor which is coupled across the source through a controllable switch for a first selected interval of time. The charger further includes a path between the accumulator of energy and the battery to be charged for the transfer of the stored energy to the battery. The path between the accumulator and the battery advantageously includes a unilateral impedance element having a recovery time such that a discharge path is provided for the battery during a second selected interval of time substantially less than the first selected interval of time.

3,775,660
MEANS AND METHODS FOR BATTERY CHARGE RETENTION CIRCUITS

Vernon C. Potts, Hazelwood, Mo., assignor to Chargematic, Inc., Chesterfield, Mo.

Filed July 10, 1972, Ser. No. 269,998
Int. Cl. H02j 7/02
U.S. Cl. 320—23 2 Claims

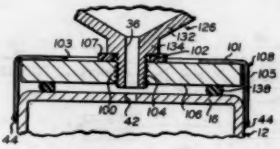


This invention comprises a circuit in which a battery charge is maintained by a continuous supply of half-wave rectified alternating current of small magnitudes, utilizing the same components that were utilized to obtain a charge in the battery by placing one of the rectifying diodes in series with a high impedance timing motor and completing the current path through the battery terminals when the charging circuit is inoperative.

3,775,661
RECHARGEABLE BATTERY POWER SOURCE WITH GAS-PRESSURE SWITCH

James Frezzolini, and James J. Crawford, both of Ringwood, N.J., assignors to Frezzolini Electronic Inc., Hawthorne, N.J.

Filed May 23, 1972, Ser. No. 256,123
Int. Cl. H01m 45/04; H02j 7/00
U.S. Cl. 320—46 3 Claims

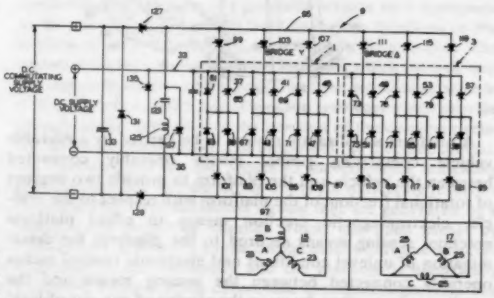


The source comprises a battery of the type adapted to produce an increased gaseous pressure when the battery is fully charged such as a nickel-cadmium battery. The battery includes a cylindrical jacket having top and bottom walls and the control device is sealingly connected to the top wall and is adapted to be connected to a battery charging device for controlling the operation of the device to prevent overcharging of the battery per se. The control device includes a housing having a pressure-responsive diaphragm therein which is adapted to move from a first position to a second position in response to the increased gaseous pressure produced by the battery when it is fully charged. A switch is operable between a closed state for energizing the charging device and an open state for deenergizing the charging device. Connecting means is provided for connecting the switch with the diaphragm so that the switch is moved to the open state in response to movement of the diaphragm to the second position. A passage connects the interior of the battery with the diaphragm so that the increased gaseous pressure within the jacket moves the diaphragm from the first to the second position.

3,775,662
CONSTANT FREQUENCY POWER INVERTER HAVING SILICON CONTROLLED RECTIFIER MULTIBRIDGE INPUTS FOR OUTPUT WAVE SHAPING WITH VARIABLE PHASE CONTROL FOR OVERLOAD CONDITIONS

Albert W. Compoly, Wall; Robert F. Kautz, Spring Lake; Robert C. Eckenfelder, Point Pleasant, and Francis X. Foerch, Brick Town, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 7, 1971, Ser. No. 205,538
Int. Cl. H02m 7/48
U.S. Cl. 321—5 4 Claims



A static inverter for converting D. C. power to three phase A. C. power which has a bridge circuit connected to the D. C. power source and including a plurality of silicon controlled rectifiers turned on by logic signals from a logic control cir-

cuit. A commutating circuit has silicon controlled rectifiers turned on by logic signals from the logic control circuit to control a single LC network to provide reverse polarity voltages to all the silicon controlled rectifiers in the bridge circuit to turn them off. Three phase A. C. power is provided by transformers having their primary windings connected to the bridge circuits and their secondary windings connected in series. The static inverter may include a plurality of bridge circuits and the relative phases of the logic signals to the bridge circuits is shifted to vary the phase relationship of the currents from the bridge circuits to change the amplitude of the three phase A.C. power from the transformers to avoid overloading the inverter in case of a short circuit in the load.

3,775,663

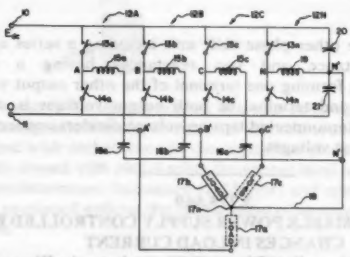
INVERTER WITH ELECTRONICALLY CONTROLLED NEUTRAL TERMINAL

Fred G. Turnbull, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 24, 1972, Ser. No. 283,530

Int. Cl. H02m *7/52*

U.S. Cl. 321—9 A **10 Claims**



A solid state inverter, or other single phase or polyphase power converter, has an electronic neutral to enable direct connection to unbalanced loads without requiring a fundamental frequency output transformer. The electronic neutral terminal circuit is typically an additional single phase inverter operated as a current source or sink to maintain the potential at the neutral terminal at a controlled voltage independent of neutral current flow into and out of the neutral terminal. The preferred embodiment is a three-phase pulse width modulated inverter supplying single phase and polyphase unbalanced loads.

3,775,664

CONTROL CIRCUIT FOR A HIGH VOLTAGE POWER SUPPLY UTILIZING A RECTIFIER CASCADE

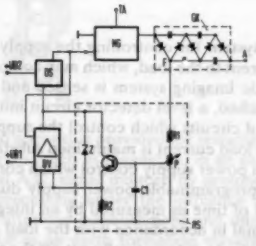
Udo Forstmeyer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 18, 1973, Ser. No. 324,747

Claims priority, application Germany, Feb. 21, 1972, P 22 08 079.1

Int. Cl. G05f *1/12;* **H02m** *7/24*

U.S. Cl. 321—18 **1 Claim**



A high voltage power supply unit employs a control circuit for controlling the output voltage provided by way of a rectifier cascade. A highly ohmic resistance and a potentiometer having a movable tap are serially connected between a tap of the rectifier cascade and ground. The movable tap is connected to a difference amplifier by way of an emitter follower circuit and the difference amplifier is connected to control a high voltage generator which feeds the rectifier cascade. A power stage, in the form of a Darlington circuit, is interposed between the difference amplifier and the high voltage generator to provide a sufficiently high load current supply for the high voltage generator.

3,775,665

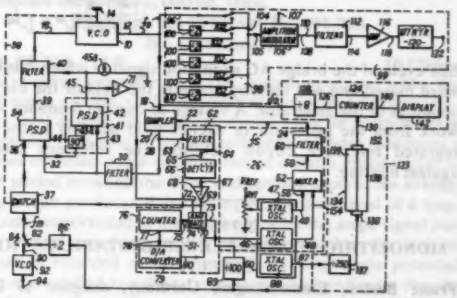
APPARATUS FOR GENERATING AN ELECTRICAL OUTPUT SIGNAL OF VARIABLE FREQUENCY

Peter Sample, Bracknell, England, assignor to The Solartron Electronic Group Limited

Filed Nov. 8, 1972, Ser. No. 304,869

Int. Cl. H02m *5/00*

U.S. Cl. 321—61 **23 Claims**



The invention provides a frequency generator capable of producing an output frequency which is continuously variable but which is nevertheless phase-locked to a stable reference frequency. The output frequency is derived from a V.C.O., and is sampled at the reference frequency to produce a difference frequency equal to the difference between the output frequency and a harmonic of the reference frequency. This difference frequency is maintained equal to another reference frequency, lower than the first, by comparison with this other reference frequency in a phase-sensitive detector, whose output is applied to the V.C.O. to complete a phase-locked loop.

The first reference frequency is produced by mixing the outputs of two variable-frequency crystal-controlled oscillators, one of which is manually adjustable and the other of which is controlled by a control circuit. It is arranged that while the output frequency of the V.C.O. is being coarsely manually adjusted, the phase-locked loop is disabled and the control circuit adjusts the frequency of its crystal-controlled oscillator to maintain the difference frequency substantially equal to the other reference frequency. After coarse adjustment, therefore when the phase-locked loop is re-enabled it is already almost in lock. The output frequency is then finely adjusted by manual adjustment of the frequency of the other crystal-controlled oscillator.

3,775,666

VOLTAGE REGULATOR FOR SYNCHRONOUS GENERATORS

Forest D. Smith, St. Louis Park, Minn., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.

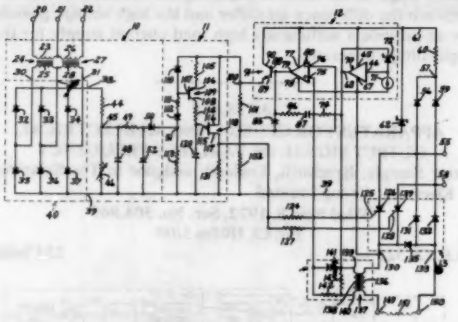
Filed Apr. 24, 1972, Ser. No. 246,948

Int. Cl. H02p *9/30*

U.S. Cl. 322—28 **3 Claims**

An accurate, stable, and inexpensive voltage regulator for single or multiple phase synchronous generators. A monolithic integrated circuit comprising reference and error amplifiers establishes a stable output reference voltage. A comparator amplifier compares the reference voltage with a sensed output voltage of the generator and provides an excitation signal to a

charging circuit in response thereto. Upon reaching a predetermined charging level, the ...rging circuit discharges through a unijunction transistor triggering circuit and enables the input gates of a pair of silicon controlled rectifiers configured in opposite legs of an AC bridge circuit. When enabled, each silicon controlled rectifier will conduct during that



half cycle of the bridge AC excitation signal in which it is forward biased and will thereby energize the field or the exciter windings of the generator. A voltage or current feedback network from the generator or exciter field winding to the integrated reference circuit stabilizes the reference circuit against hunting.

3,775,667

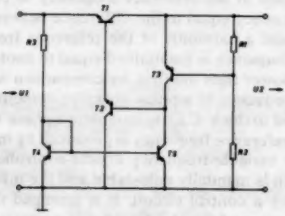
MONOLITHIC INTEGRABLE SERIES STABILIZATION CIRCUIT

Franz Bartos, Emmendingen, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,494

Int. Cl. G05f 1/56

U.S. Cl. 323—22 T **1 Claim**



A series stabilization circuit to generate a regulated voltage with a leakage current in the order of a few microamperes. To provide the low leakage current a constant current source is provided that feeds the common connection point of the base of the auxiliary transistor amplifier and the collector of the reference transistor amplifier.

3,775,668

CIRCUIT ARRANGEMENT FOR PRODUCING TWO FREQUENCY INDEPENDENT MUTUALLY PHASE SHIFTED OUTPUT A.C. VOLTAGES FROM TWO INPUT A.C. VOLTAGES

Venkat Chellam Narayan, Spreitenback, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

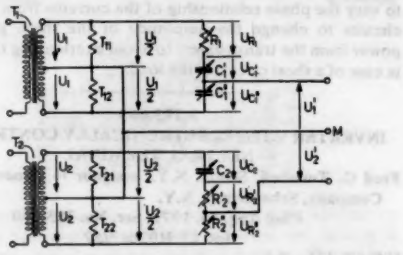
Filed June 12, 1972, Ser. No. 261,932

Claims priority, application Switzerland, June 15, 1971, 8687/71

Int. Cl. H03h 7/18, 7/50

U.S. Cl. 323—122 **8 Claims**

A circuit arrangement wherein two output a.c. voltages having a mutual phase shift are derived from two input a.c. voltages. The mutually phase shifted output voltages are frequency independent and two phase shifting units included in the circuit are comprised of resistances and of reactances of the same kind, one of the phase shift units including a series connected reactance, and two resistances having a tap therebetween forming one terminal of one of the output voltages, and the other phase shift unit including a series connected resistance and two reactances having a tap therebetween forming one terminal of the other output voltage. The second terminal of both output voltages is constituted by interconnected taps on voltage dividers connected to the two input voltages.



3,775,669

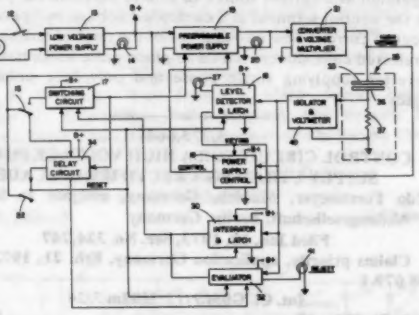
PROGRAMMABLE POWER SUPPLY CONTROLLED BY CHANGES IN LOAD CURRENT

Joseph R. Baker, San Diego, Calif., assignor to Diagnostic Instruments, Inc., San Diego, Calif.

Filed June 8, 1972, Ser. No. 260,822

Int. Cl. G05f 1/50

U.S. Cl. 323—4 **7 Claims**

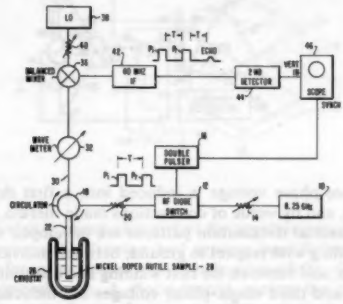


A control system for controlling the supply of current to a load. The current to the load, which may comprise elements of an ionographic imaging system is sensed and when the peak thereof is reached, a level detector circuit initiates the operation of control circuits which control the supply of current to the load. The load current is maintained substantially constant by means of a power supply control which controls the output voltage of a programmable power supply during a predetermined period of time as measured by an integrator, which integrates a signal in accordance with the load current. The integrator operates to automatically cut off the supply of current to the load when the desired flow to the load has been attained.

3,775,670
HIGH BANDWIDTH - TIME PRODUCT SPIN ECHO SYSTEM

Donald A. Bozanic; Dickron Mergerian, both of Baltimore; Ronald W. Minarik, Lutherville, and Peter H. Pincoffs, West Severna Park, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1970, Ser. No. 33,201
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **7 Claims**

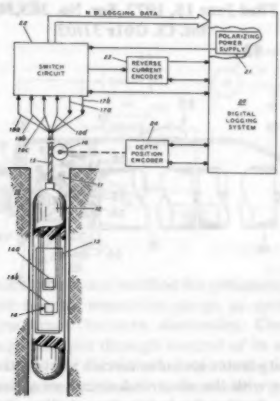


A system for the generation of a spin-echo signal utilizing a paramagnetic sample of titanium dioxide (rutile) selectively doped with nickel wherein the crystalline electric field of the rutile doped with nickel splits the energy level of the nickel at a predetermined frequency (8.25GHz) and spin-echo signals are produced without the requirement of an external magnetic field.

3,775,671
NUCLEAR MAGNETISM WELL LOGGING METHOD AND APPARATUS

Robert J. S. Brown, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 3, 1972, Ser. No. 268,287
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **14 Claims**



A method and apparatus provided for reducing the effect of magnetic materials, such as magnetite, in an earth formation on the electrical A.C. signal induced by protons of earth formation fluids precessing under the influence of the earth's magnetic field after the establishment and interruption of a polarizing field,d in an earth formation traversed by a wellbore. In accordance with the present invention, before the polarizing field, say of magnitude H_p gauss, is established within the earth formation (by passing a direct current through a field coil in a normal, first direction) the direction of the polarizing current, itself, is reversed for a predetermined time interval. Using only a single reversal of current (not oscillating)—suprisingly—demagnetizes enough of the magnetic particles within the earth formation which could cause inhomogeneities in the proton precessional field that the response characteristic of the subsequently detected A.C. signals are significantly improved, say, by twenty percent without hindering important digital control aspects of the logging process. The magnitude of the reverse field caused by the single reversal of the polarizing current (prior to establishment of the polarizing field in the earth formation) is preferably of a magnitude of, say $(-H_p)$ gauss. The reversal period can be quite short, say 1–20 milliseconds.

3,775,672
INTERNAL COMBUSTION ENGINE IGNITION TIMING INSTRUMENT

Vincent H. Letosky, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

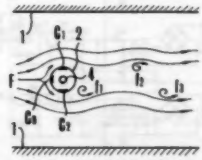
Filed Sept. 25, 1972, Ser. No. 291,793
Int. Cl. F02p *17/00*
U.S. Cl. 324—16 R **10 Claims**

Circuitry responsive to a TDC signal, produced when the reference cylinder of the engine is at the top dead center position, and an ignition signal, produced when an ignition spark potential is generated for the reference cylinder, produces a series of timing angle signal pulses of a width proportional to the period between the TDC and ignition signals. An averaging circuit produces a timing angle potential signal of a magnitude proportional to the width of the timing angle signal pulses and of a polarity which indicates whether the ignition spark is retarded or advanced. The timing angle potential signal is applied to a digital voltmeter which indicates directly in degrees the ignition spark retard or advance and is compared with timing angle high and low reference potentials, of respective magnitudes above and below the magnitude of the timing angle potential signal at the selected number of degrees of ignition spark advance or retard, in respective comparator circuits which produce respective output signals indicating whether the ignition spark is retarded or advanced from or occurs at a selected timing angle.

3,775,673
ELECTROMAGNETIC KARMEN VORTEX SENSING FLOW METERS

Masayasu Watanabe, Yokohama City, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Apr. 26, 1972, Ser. No. 247,828
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 FL **11 Claims**



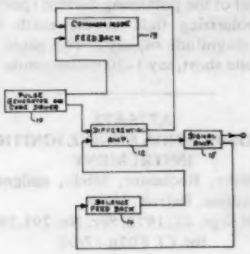
In a Karman vortex flow meter of the type wherein a rod is inserted in fluid to be measured to create therein Karman vortices and a signal related to the vortices is detected to measure the flow velocity of the fluid, there are provided means contained in the rod for generating magnetic flux in the direction of the axis of the rod and a pair of electrodes mounted on the surface of the rod in contact with the fluid whereby to detect the magnetomotive forces including the variations in the velocity of the fluid caused by the Karman vortices created near the rod.

3,775,674

FLUX GATE GRADIOMETER USING A PULSE GENERATOR TO DRIVE THE ENERGIZING WINDINGS AS WELL AS ACTUATE THE DETECTOR

Peter H. Van Sloun, Hopkins, Minn., and Burton A. Pearlstein, Sharon, Mass., assignors to the United States of America as represented by the Secretary of the Air Force

Filed Jan. 27, 1972, Ser. No. 221,474
Int. Cl. G01r 33/04
U.S. Cl. 324—43 G 2 Claims



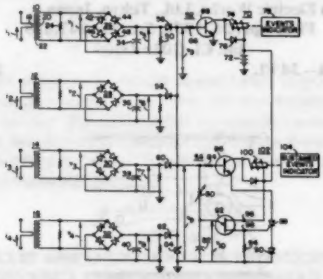
A gradiometer is provided utilizing two flux gate magnetometers to detect magnetic field strength. The signal is sensed only during the magnetic core saturation drive pulse portion of the cycle, the core driver circuitry acting to control sense windings and drive windings simultaneously. There is provided unidirectional drive of the core, a low duty cycle drive, and interrogation of the sense winding only during the drive pulse. The unidirectional drive of the core and low duty cycle conserve power.

3,775,675

APPARATUS FOR INDICATING WHEN CURRENT EXCEEDS A PREDETERMINED LEVEL AND WHEN SAID LEVEL IS EXCEEDED FOR A PREDETERMINED PERIOD OF TIME

John A. Freeze, South Boston; Elmo D. Price, Jr., Halifax, and Garlington C. Wilburn, South Boston, all of Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 15, 1972, Ser. No. 263,055
Int. Cl. G01r 19/16, 31/00
U.S. Cl. 324—51 8 Claims



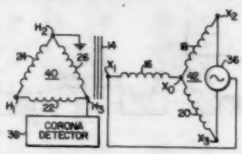
Transformer fault current monitor which provides recorded indications of the number of times any fault currents have occurred and also of the number of times fault currents which have a duration of more than a predetermined length of time have occurred. Current transformers coupled to the monitored current provide output voltages which are rectified and peak detected. The peak detected voltages are applied to first and second counting means. The first counting means is activated when the monitored current exceeds a predetermined level. The second counting means is activated when the monitored current exceeds a predetermined level for a predetermined length of time.

3,775,676

METHODS FOR LOCATING PARTIAL DISCHARGES IN ELECTRICAL APPARATUS

Ronald T. Harold, Murrysville, and Charles A. Long, Sharpsville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 21, 1972, Ser. No. 273,920
Int. Cl. G01r 31/06, 31/08
U.S. Cl. 324—52 10 Claims



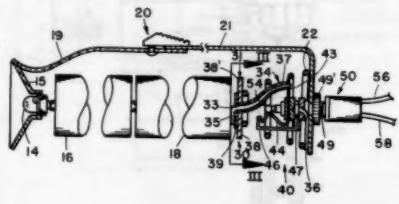
A three-phase voltage is induced into a first three-phase winding, and by virtue of connections made thereto, a plurality of potential distribution patterns are developed across the first winding with respect to ground, between individual phase windings, and between the first winding and a second winding. Second and third single-phase voltages are induced into the first winding and additional potential distribution patterns are developed. The potential distribution patterns developed by the first, second and third voltages and connections are compared at the corona inception or extinction level to determine the potential common to all three potential distribution patterns produced by the three voltages. The corona source is located at the site within the windings corresponding to this common potential. Observing the relationship of the corona signal to the voltage waveforms provides additional information regarding the corona location, and also about the nature of the corona source.

3,775,677

FLASHLIGHT-CONTINUITY TESTER HAVING PLUG AND JACK ARRANGEMENT

David C. Garrett, 105 Lakeview Dr., R.R. No. 2, Blairsville, Pa., and Harold W. Reick, 7535 Woodvale, S.E., Grand Rapids, Mich.

Filed June 15, 1972, Ser. No. 263,307
Int. Cl. G01r 31/02
U.S. Cl. 324—53 9 Claims



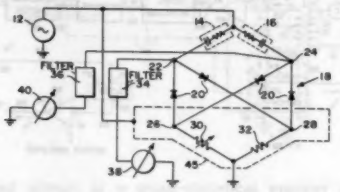
A continuity tester includes circuit interruption means coupled in series with the electrical circuit of a flashlight. A pair of continuity testing leads is connected to the interruption means by a plug to which the leads are coupled and a switch-including jack positioned on the flashlight and coupled to the interruption means. When the continuity leads are disconnected by removing the plug, the jack switch electrically bypasses the interruption means and the flashlight can be operated in a normal fashion. When the leads are connected by inserting the plug into the jack, the jack switch changes position and the flashlight can be lighted only when electrical continuity exists between the test leads.

3,775,678

IMPEDANCE COMPARING CIRCUIT WITH GROUND REFERENCED READOUT AND STRAY CAPACITANCE INSENSITIVITY

Robert C. Abbe, Newton, Mass., assignor to ADE Corporation, Watertown, Mass.

Filed Dec. 9, 1971, Ser. No. 206,357
Int. Cl. G01r 11/52, 27/26
U.S. Cl. 324—60 C 12 Claims



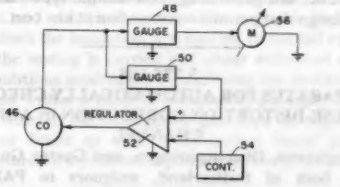
An impedance comparing circuit for supplying excitation to equal or unequal reference and sensing impedances with a ground referenced output signal indicative of the difference between impedances. A diode matrix excites the reference and sensing impedances from an oscillator through first and second DC blocking impedances respectively during one polarity of current and in the reverse relationship during the opposite polarity of current. Low impedance values in the first and second impedances provide near equality in the voltage across the reference and sensing impedances and minimize the effect of capacitance between them. Tuning or increased diode matrix impedances will augment the sensitivity at a sacrifice in the elimination of the effect of capacitance between the reference and sensing impedances.

3,775,679

APPARATUS AND METHOD FOR DIRECT READOUT OF CAPACITIVELY GAUGED DIMENSIONS

Robert C. Abbe, Newton, Mass., assignor to ADE Corporation, Watertown, Mass.

Filed Dec. 9, 1971, Ser. No. 206,364
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 13 Claims



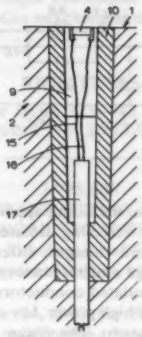
An electronics system and method for processing the output of a dimension sensing capacitive gauge or probe having a measured capacitance between electrodes. Control of the capacitive gauge's output through control of its excitation allows a parameter of the excitations output to be used as an indication directly proportional to a dimension, typically electrode separation, which varies inversely with the capacitance between the electrodes. An output from a second similar gauge is used to deflect a meter for a direct indication of the dimension. Alternatively a second excitation for the second gauge is provided with its output used to control the first excitation whereby the frequency ratio of the two excitations provides a direction indication of the dimension and is easily digitized. Environmentally induced changes in either gauge are balanced by proximity of the gauges and the excitation amplitude is regulated.

3,775,680

DEVICE FOR THE DETECTION OF WEAR

Olav Egeland, Oslo, Norway, assignor to A/S Computas, Oslo, Norway

Filed Feb. 18, 1972, Ser. No. 227,599
Claims priority, application Norway, Feb. 22, 1971, 628/71
Int. Cl. G01r 27/02
U.S. Cl. 324—65 P 3 Claims



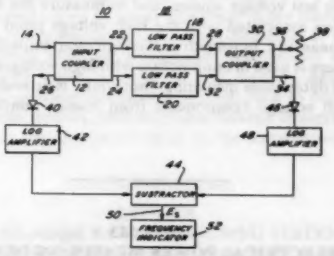
Device for the detection of wear on the surface of a machine element, characterized thereby that in the material of the machine element there is provided a detector element in the form of an electrical resistor the current carrying cross-section of which is adapted to be reduced along with the wearing-down of the surface of the machine element.

3,775,681

FREQUENCY MEASURING MEANS

Leonard J. Konrad, East Vineland, N.J.

Filed July 14, 1972, Ser. No. 271,904
Int. Cl. G01r 23/02, 27/04
U.S. Cl. 324—78 R 10 Claims

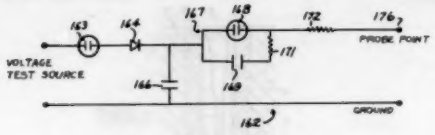


A frequency measuring means comprising a network having input means for receiving a signal which is to have its frequency measured and output means delivering signals transmitted therethrough, said network providing a signal transfer characteristic which is a function of frequency for the range of frequencies to be measured, first means deriving signals reflected from the input means of said network, second means deriving from the output means signals transmitted by said network, and third means receiving and comparing signals from said first and second means for providing an indication of the frequency of a signal delivered to the input of the network.

3,775,682
SOLID-STATE HIGH IMPEDANCE METER SYSTEM

Hugh C. Ross, 11915 Shadybrook Ct., Saratoga, Calif.

Division of Ser. No. 726,452, May 3, 1968. This application Nov. 13, 1972, Ser. No. 305,958
Int. Cl. G01r 13/40, 27/02
U.S. Cl. 324—122 2 Claims



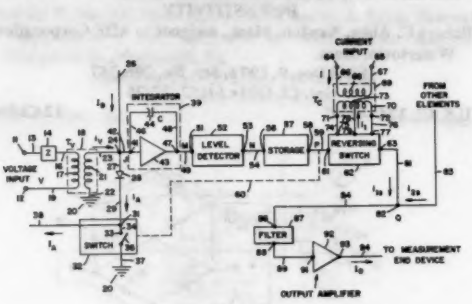
Presented is a system, including apparatus and methods of operation thereof, for effecting isolated measurement and sensing of line to ground voltages, differential voltages, currents, insulation leakage and resistances, Corona levels, and other parameters in insulated conductors and related systems associated with low and high power, low and high voltage electrical and electronic systems. The system includes a high input impedance meter unit actuated by a solid-state amplifier circuit including a pair of feedback circuits that cooperate with transistor amplifiers to maintain substantially constant the ratio of input and output from the circuit over a wide range of AC and DC voltages and currents. In its different applications, the high input impedance meter including solid-state amplifier circuit is used in conjunction with a variety of probes, both low voltage and high voltage types, for measurments of various voltages, and may be utilized with a proximity probe for direct sensing of AC fields. The high input impedance of the meter movement and solid-state circuit also permits the use of Corona voltage level and detecting probes for both high voltage direct and low voltage indirect or proximity measurement of various levels of voltages. Inasmuch as it is important that systems of this type be predictably accurate and operative, the system also includes a high voltage portable test unit to test the voltmeter and probes. To insure complete reliability of values being measured, the high voltage portable test source itself is subject to test to determine that it is operating properly before it is used to test the voltmeter and probes, and for this purpose a high voltage megohmmeter insulation leakage current-emission detecter is provided to test the high voltage portable test voltage source, and to measure the high voltage insulation associated with the high voltage point or terminal being measured. Inasmuch as the high input impedance metering system is used in conjunction with high voltages, a collapsible and detachable insulating "hot stick" is provided to isolate the high voltage components from human contact while in use.

3,775,683
ELECTRICAL POWER MEASURING DEVICE

Karel Barta, 1952 Montclair Ct., Walnut Creek, Calif., and Wilson S. Pritchett, 6262 Highland Ave., Richmond, Calif.

Filed May 10, 1972, Ser. No. 252,346
Int. Cl. G01r 21/00; G06g 7/16
U.S. Cl. 324—142 4 Claims

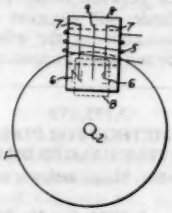
An electrical power measuring device is for use with electrical quantities such as alternating voltage and current and has a voltage integrator connected through an impedance across a selected source of alternating voltage and supplied with a local current of one polarity and of a predetermined value and also supplied with a local current of the opposite polarity and of substantially twice the predetermined value. A level detector responsive to voltage level in the integrator is effective through a pulse mechanism to switch one of the local currents off and on and simultaneously to switch a circuit extending between the selected current source and an output measuring or actuating device. Various amplifying, storage and filtering devices are used.



3,775,684
ACCELEROMETER

Louis S. Hoodwin, Rte. 1, Box 246, Sawyer, Mich.

Filed Jan. 16, 1970, Ser. No. 3,302
Int. Cl. G01p 3/42
U.S. Cl. 324—162 2 Claims



This invention describes an accelerometer of the electromagnetic, self-generating, non-seismic type having a simplified design that permits construction at low cost.

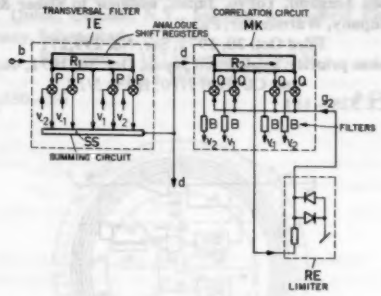
3,775,685
APPARATUS FOR AUTOMATICALLY CHECKING PULSE-DISTORTION CORRECTION IN A SIGNAL CHANNEL

Fritz Eggimann, Oberengstringen, and Gustav Guanella, Zurich, both of Switzerland, assignors to PAFELHOLD Patentverwertungs & Electro-Holding AG, Glaurus, Switzerland

Filed Sept. 14, 1971, Ser. No. 180,427
Claims priority, application Switzerland, Sept. 25, 1970, 14243/70
Int. Cl. H03h 7/36
U.S. Cl. 325—42 33 Claims

A distortion correction scheme and apparatus in which communication signals are transmitted in the form of discrete pulses separated from one another by individual constant amplitude pulses of short time interval and irregularly changing sign. A transversal filter under control of a correlator corrects for the distortion present. The reference signal which is employed to adjust the regulating voltages developed by the correlator to control the product forming circuits of the transversal filter, is interrupted during the occurrence of each communication pulse whereby any adjustment necessary in the correction of distortion is performed continuously throughout

transmission and only during those intervals in which communication signals are absent. Means are disclosed for generating



the inserted signals in a quasi-statistical manner and for synchronizing operation at both the transmitting and receiving ends of the channel.

3,775,686

METHOD OF AND APPARATUS FOR VOLTAGE TESTING OF HIGH-VOLTAGE EQUIPMENT AND ELECTRICAL MACHINES

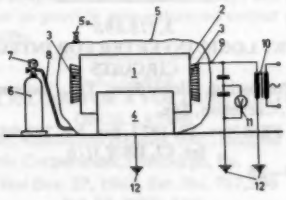
Bertold Ganger, and Roland Schuler, both of Wettingen, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed May 24, 1972, Ser. No. 256,266

Claims priority, application Switzerland, June 15, 1971, 8684/71

Int. Cl. G01r *31/12*

U.S. Cl. 324—54 **3 Claims**



A method of testing the strength of insulation on electrical equipment and electrical machines at voltages higher than those to which the insulation is subjected in normal operation in which the testing is carried out under enhanced environmental conditions established by enclosing the insulated parts to be tested within a flexible transparent gas-tight envelope filled out with an electronegative gas, such as sulphur hexafluoride or Freon or other fluorocarbon based gas, or a gas/air mixture, to a pressure slightly in excess of atmospheric.

3,775,687

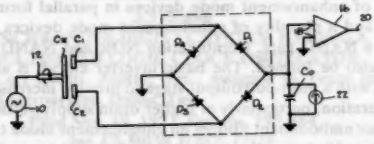
CAPACITANCE DIFFERENCE MEASURING CIRCUIT

Henry T. Machlanski, Rd. 3, Huntington, L.I., N.Y.

Filed Dec. 17, 1971, Ser. No. 209,190

Int. Cl. G01r *11/52, 27/26*

U.S. Cl. 324—60 C **2 Claims**



A circuit and method for producing an output signal which is a function of the relative capacitances of two capacitors. Each capacitor is excited by an AC voltage. The voltage drop resultant on the charge passing through one capacitor is applied during only the positive half-cycle of the alternating voltage applied to that capacitor, across an output capacitor. The voltage developed by the charge passing through the other capacitor, during only the negative half-cycle of the alternating voltage applied thereto, is also applied across the output capacitor. The signal is observed by measuring the accumulated charge on the output capacitor, or the net charging current passing therethrough. The output signal is thus a plus or minus DC voltage and/or net charging current.

ERRATUM

For Class 325—42 see:
Patent No. 3,775,685

3,775,688

SYSTEM FOR TRANSMITTING, RECEIVING AND DECODING MULTILEVEL SIGNALS

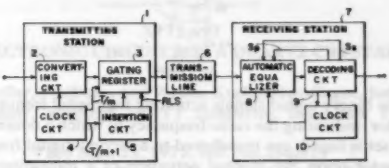
Shigehiko Hinoshita, Yokohama, and Shoji Hagiwara, Tokyo, both of Japan, assignors to Fujitsu, Limited, Kamikodanaka, Kawasaki, Japan

Filed Mar. 24, 1972, Ser. No. 237,638

Claims priority, application Japan, Mar. 25, 1971, 46/17538

Int. Cl. H04b *3/10, 1/10*

U.S. Cl. 325—42 **18 Claims**



Apparatus for automatically equalizing a multilevel signal transmission system is disclosed for transmitting a signal in the form of a multilevel signal. In particular, an automatic equalization system is adapted to provide a reference level signal having fewer levels than the multilevel signal; predetermined level values are inserted in a train of multilevel signals at predetermined time intervals for the purpose of correct detection of the multilevel from the received signal waveform although intersymbol interference is introduced in a received multilevel signal owing to linear distortion of the transmission line such as amplitude distortion, phase distortion or the like. In the receiving side, the intersymbol interference with the reference level signal is detected and then an adjustment device of an automatic equalizer is controlled to correct intersymbol interference, with the result that the intersymbol interference in the multilevel signal to be transmitted is corrected.

3,775,689

SIGNAL-TO-NOISE RATIO MEASURING SYSTEM FOR FREQUENCY MODULATED COMMUNICATION SYSTEMS

Charles Greenwald, Livingston, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

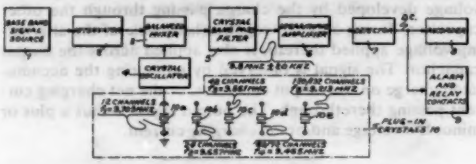
Continuation-in-part of Ser. No. 751,558, Aug. 9, 1968, abandoned. This application Dec. 18, 1970, Ser. No. 99,645

Int. Cl. H04b *1/06*

U.S. Cl. 325—363 **10 Claims**

A balanced mixer and crystal oscillator translates a baseband signal upward in frequency just below the passband of a crystal filter at the output of the mixer. The filter passes only the noise in its passband to a logarithmic amplifier-detector. The DC output of the detector is coupled to a recorder calibrated directly in signal-to-noise ratio of the translated

baseband signal. Different width baseband signals (different number of FDM channels) are handled by changing the



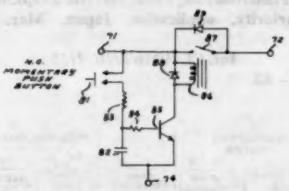
crystal of the oscillator so that the translated baseband signal remains just below the filter passband.

3,775,690

RADIO FREQUENCY STORE AND DISPLAY SYSTEM

Richard L. Ravenelle, and David E. Thorburn, both of Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force

Filed July 6, 1972, Ser. No. 269,358
Int. Cl. H04b *1/06*
U.S. Cl. 325—455 **1 Claim**



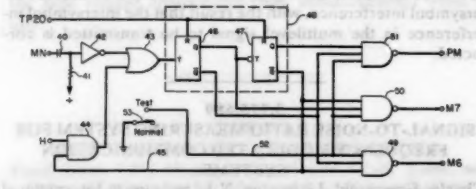
The binary coded signals actuating the digital frequency indicator, indicating the radio frequency to which a communication set is tuned, are transferred to a second digital frequency indicator upon the manual actuation of a momentary push button switch. The second digital indicator system stores and continuously displays the former frequency irrespective of any subsequent tuning of the communication set until the momentary switch is again activated to store and display the frequency to which the communication set is then tuned.

3,775,691

LOGIC CONTROL CIRCUIT

Richard G. Merrell, Darien, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 1, 1971, Ser. No. 203,571
Int. Cl. H03k *21/32*
U.S. Cl. 328—48 **3 Claims**



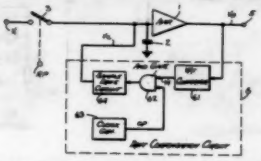
A circuit for controlling the inhibit logic stage of a subscription television system encoder or the like generates a series of control pulses at predetermined intervals following receipt of an initial command pulse. The generator comprises a counter having a plurality of individual counting states corresponding to generation of respective ones of the control pulses. Once the counter has assumed its initial counting state in response to receipt of a command pulse, a novel input circuit enables a source of stepping pulses to continue the counting cycle until the final counting state is reached, at which time further application of stepping pulses is terminated.

3,775,692

DRIFT COMPENSATION CIRCUIT

Tadashi Azegami, Tokyo, Japan, assignor to Fisher & Porter Company, Warminster, Pa.

Filed Oct. 20, 1972, Ser. No. 299,271
Claims priority, application Japan, Oct. 30, 1971, 46/86568
Int. Cl. H03f *1/10*; H03k *5/18*
U.S. Cl. 328—151 **1 Claim**



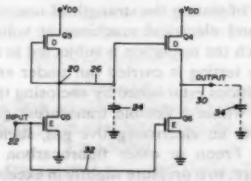
A drift-compensated, electronic sample hold circuit for delivering a control signal to a valve or other final control element in a process control system in order to hold its position. The sample hold circuit is constituted by an amplifier and a memory capacitor. The drift compensation means associated with the sample hold circuit comprises a converter that converts the output of the sample hold circuit to a pulse train signal whose frequency is a function of the output voltage of the sample hold circuit, a clock pulse generator that yields a clock pulse signal having a predetermined frequency, an AND gate responsive to the pulse train signal and the clock pulse signal to produce an output signal only when the signals applied thereto overlap, and a sample drive circuit responsive to the output signal from the AND gate to produce a compensation signal which is fed to the input of the sample hold circuit.

3,775,693

MOSFET LOGIC INVERTER FOR INTEGRATED CIRCUITS

Robert J. Proebsting, Richardson, Tex., assignor to Moskek Company, Carrolton, Tex.

Filed Nov. 29, 1971, Ser. No. 202,953
Int. Cl. H03f *3/16*
U.S. Cl. 330—35 **6 Claims**



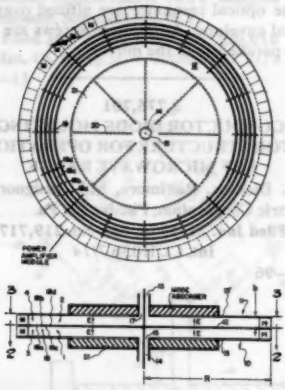
The specification discloses a logic inverter comprised of a depletion mode MOSFET used as a resistive load between a drain supply voltage and an output and one or more enhancement mode MOSFET's connected between output and source supply voltage. The source and gate of the depletion mode device are electrically common, and the gates of the enhancement mode devices form the logic inputs. The use of one enhancement mode device provides a simple inverter, a plurality of enhancement mode devices in parallel form a NOR gate, and a plurality of enhancement mode devices in series form a NAND gate. Combination NOR and NAND GATES may also be formed. The basic inverter circuit is also combined with a push-pull output stage to provide increased speed of operation, particularly at higher drain supply voltages. Still another embodiment utilizes an enhancement mode transistor connected between the depletion mode transistor and the output of the basic inverter stage to provide a disable function in which output drain current is switched off under all logic input conditions.

3,775,694

AMPLIFIER FOR MICROWAVES COMPRISING RADIAL WAVEGUIDE-HYBRID COUPLER

John P. Quine, Colonie, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 2, 1973, Ser. No. 329,234
Int. Cl. H03f 3/60
U.S. Cl. 330—56 9 Claims



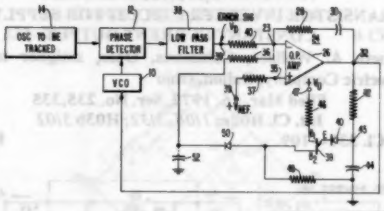
A radial waveguide-3dB hybrid coupler in a circular configuration comprises two coaxial radial wave-guides, one with an input port and one with an output port, having a branch-guide hybrid coupler formed in the common broad wall. Dual arrays of one-port, reflective type, power amplifying modules are mounted at the periphery of the waveguide structure. Input power is coupled to both module arrays and reflected to the output port to provide gain-enhanced output power over broad bandwidths.

3,775,695

PHASE LOCK LOOP FOR A VOLTAGE CONTROLLED OSCILLATOR

Charles W. Hill, Linthicum Heights, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 27, 1968, Ser. No. 787,390
Int. Cl. H03b 3/06
U.S. Cl. 331—4 9 Claims



A phase locked voltage controlled oscillator having an automatic sweep and lock-up circuit employing a unijunction transistor relaxation oscillator as the controlling device in the circuit.

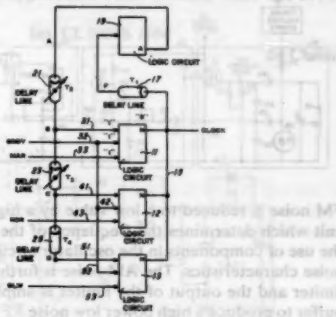
3,775,696

SYNCHRONOUS DIGITAL SYSTEM HAVING A MULTISPEED LOGIC CLOCK OSCILLATOR

Emory Carl Garth, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 18, 1971, Ser. No. 199,954
Int. Cl. H03k 3/282, 17/28
U.S. Cl. 331—57 11 Claims

A multispeed synchronous digital system, such as a digital data processing system, includes a multispeed logic clock oscillator for producing a synchronizing clock signal. A plurality of multi-input ECL NAND gates, one for each system speed, have a common clock output. The clock output is connected in feedback relationship through cumulative time delays to the NAND gate inputs. A system operating speed is determined according to a logic control signal input to the



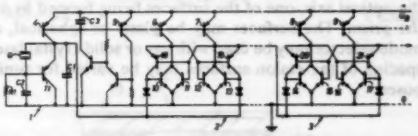
NAND gates, with the logic control signal functioning as a speed select signal. Speed select signals are adaptable to be controlled under manual or program execution control. Adjustable delay lines enable selective adjustment of clock pulse width, and hence clock frequency for each of the plurality of system speeds.

3,775,697

ELECTRONIC CIRCUIT FOR A QUARTZ CRYSTAL WATCH

Hans Keller, Freiburg, and Walter Kreitz, Mundingen, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sept. 22, 1972, Ser. No. 290,919
Claims priority, application Germany, Jan. 21, 1972, P 22 02 762.9
Int. Cl. G04c 3/00; H03b 5/36
U.S. Cl. 331—74 5 Claims



There is disclosed an electronic circuit for a quartz crystal wrist watch including a quartz crystal oscillator, bistable flip-flop frequency divider stages and a motor driver circuit. A common multiple transistor constant current source feeds the oscillator and frequency divider. The constant current source and oscillator transistors are of the same conductivity type and complementary to the frequency divider transistors. This arrangement reduces the effect of battery voltage changes caused by motor driver pulses and improves the accuracy of the watch.

3,775,698

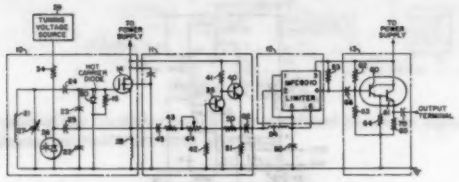
CIRCUIT FOR GENERATING A HIGH POWER RF SIGNAL HAVING LOW AM AND FM NOISE COMPONENTS

John L. Nugent, Baltimore, and Harry W. Claypool, Joppa, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1972, Ser. No. 277,939
Int. Cl. H03b 3/02, 5/12
U.S. Cl. 331—75 4 Claims

An RF signal generator is disclosed which has low AM and FM noise and high power output. The output signal of the RF

signal generator is a variable over an octave in response to a tuning voltage signal. The RF signal generator includes a low noise RF oscillator coupled to a limiter circuit through a first buffer amplifier. A second buffer amplifies the output of the limiter circuit to produce a high level RF output signal. The



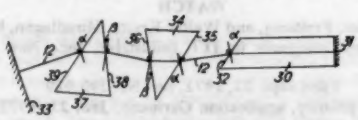
FM noise is reduced to a low value by a high Q resonant circuit which determines the frequency of the oscillator and by the use of components in the oscillator circuit which have low noise characteristics. The AM noise is further reduced by the limiter and the output of the limiter is amplified by a second buffer to produce a high power low noise RF signal.

3,775,699

LASER HAVING A GAS-FILLED FABRY-PEROT ETALON MODE SELECTOR

Ian Gardner Cassels, Loughborough, England, assignor to Ferranti Limited, England

Filed Feb. 3, 1971, Ser. No. 112,214
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 **12 Claims**



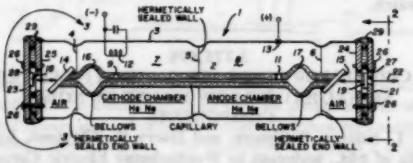
A laser contains within its optical cavity a mode selector comprising a prism and a Fabry-Perot etalon. The etalon has two spaced parallel surfaces slightly inclined to a normal to the optical axis, one of the surfaces being formed by a face of the prism. The surfaces may be plane or spherical, and the mode selector may be used with gas or solid crystal lasers. The spacing of the etalon surfaces may be varied for tuning purposes.

3,775,700

GAS LASER

Lewayne E. Garman, Sunnyvale; Piet T. Kluytmans, San Jose, and Willy H. Vanbragt, Sunnyvale, all of Calif., assignors to C W Radiation, Inc., Mountain View, Calif.

Filed Apr. 6, 1971, Ser. No. 131,654
Int. Cl. H01s *3/22, 3/02*
U.S. Cl. 331—94.5 **9 Claims**



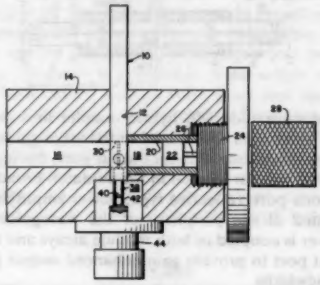
A capillary gas discharge confining tube having Brewster angle windows sealed across opposite ends thereof is hermetically sealed coaxially within a gas tight cylindrical envelope via a pair of annular end walls disposed proximate the ends of the capillary. A similar annular wall is hermetically sealed between the capillary and the outer envelope intermediate the length of the capillary for providing a center support for the capillary and for dividing the envelope into an anode chamber and a cathode chamber. The side walls of the capillary are expanded and thinned to form bellows inside the end walls of the envelope at opposite ends of the capillary to allow expansion and contraction of the capillary in use. The capillary has openings for gas communication between the respective cathode and anode chambers and the capillary. Adjustable mirrors of the optical resonator are affixed over the ends of the cylindrical envelope. Adjustment screws are provided for adjusting the parallelism of the mirrors.

3,775,701

SEMICONDUCTOR DIODE MOUNTING AND RESONATOR STRUCTURE FOR OPERATION IN THE EHF MICROWAVE RANGE

Lawrence E. Dickens, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1972, Ser. No. 219,717
Int. Cl. H03b *7/14*
U.S. Cl. 331—96 **7 Claims**



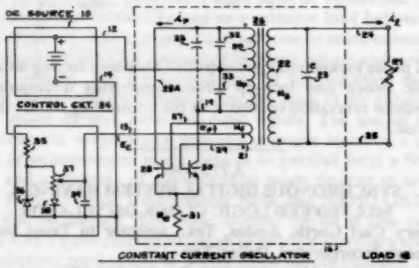
A semiconductor mounting and resonator structure particularly suitable for avalanche diode applications in the EHF microwave range, characterized in having a high degree of mechanical reliability, good heat transfer characteristics for heat generated by the diode and efficient coupling of high frequency wave energy from the diode to external waveguide circuitry.

3,775,702

TRANSISTOR INVERTER CIRCUIT FOR SUPPLYING CONSTANT CURRENT OUTPUT

Kenneth A. Wallace, Columbus, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Mar. 16, 1972, Ser. No. 235,335
Int. Cl. H02m *1/08, 3/32;* **H03b** *3/02*
U.S. Cl. 331—109 **8 Claims**



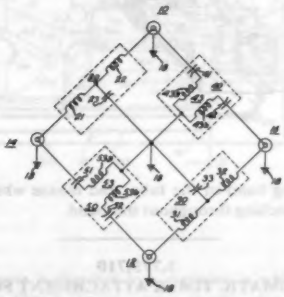
A constant current power supply for providing constant current to loads having low power requirements and variable resistance characteristic in a reliable, less complex operating mode. A tuned collector, resonant feedback, saturated cur-

rent oscillator circuit is enabled to provide an alternating current output which is proportional to an adjustable DC control voltage, and, by proper selection of the feedback amplitude in the oscillator circuit, the output current to a resistance load can be made independent of the load resistance.

3,775,703
HYBRID FILTER

Donald A. Smith, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,010
Int. Cl. H01p 5/14; H03h 7/10, 7/14
U.S. Cl. 333—11 **4 Claims**

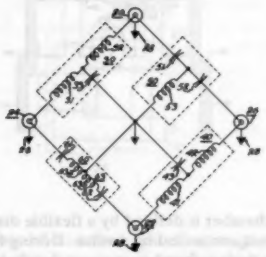


A hybrid filter having the characteristics of a hybrid coupler and high and low pass filters combined. The hybrid filter provides high pass and low pass frequency ports by employing two high pass filters and two low pass filters. The four filters form four arms of an electric bridge, and each high pass filter includes a center-tapped inductor. One center-tapped inductor eliminates the effect of undesired frequencies and thereby confines and isolates the high and low frequencies to their respective ports. The hybrid filter provides a constant input impedance at all frequencies by employing reactive elements of critical values.

3,775,704
HYBRID FILTER

Norman C. Gittinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,009
Int. Cl. H01p 5/14; H03h 7/10, 7/14
U.S. Cl. 333—11 **4 Claims**

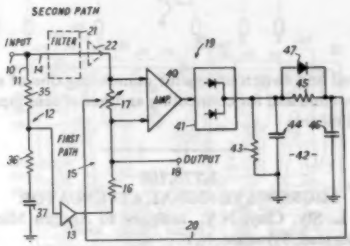


A hybrid filter having the characteristics of a hybrid coupler and high and low pass filters combined. The hybrid filter provides high pass and low pass frequency ports and employs a complementary filtering and phase inversion means such as a center-tapped inductor to isolate and confine the high and low frequencies to their respective ports. The hybrid filter provides a constant input impedance at all frequencies by employing reactive elements of critical values.

3,775,705
COMPRESSOR AND EXPANDER CIRCUITS HAVING CONTROL NETWORK RESPONSIVE TO SIGNAL LEVEL IN CIRCUIT

Ray Milton Dolby, London, England, assignor to Dolby Laboratories Inc., New York, N.Y.

Filed Mar. 8, 1972, Ser. No. 232,887
Claims priority, application Great Britain, Mar. 12, 1971, 6,747/71
Int. Cl. H04b 1/64
U.S. Cl. 333—14 **24 Claims**

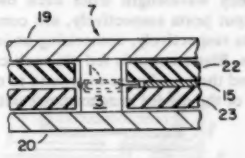


Compressor and expander circuits are constructed by combining the outputs of two circuit paths, both connected to an input terminal. The combining is effected by a variable combining means which responds to a signal level in the circuit to vary the proportions in which the two circuit paths contribute to the output signal.

3,775,706
METAL INCLOSED RESISTOR USED AS A STRIPLINE TERMINATOR

Robert J. Jones, Liverpool, and Robert C. Armani, North Syracuse, both of N.Y., assignors to the United States of America as represented by the Secretary of the Army

Filed Apr. 20, 1972, Ser. No. 246,004
Int. Cl. H01p 1/26
U.S. Cl. 333—22 R **1 Claim**



A resistor inclosed in a brass block having one end connected to the brass block and the other end connected to terminate a stripline.

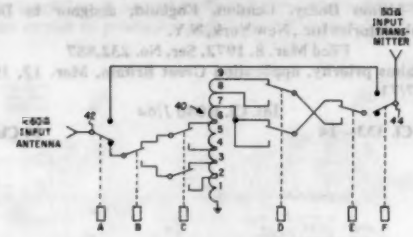
3,775,707
METHOD AND MEANS FOR ANTENNA COUPLING

Melvin A. Frazier, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 6, 1972, Ser. No. 303,745
Int. Cl. H03h 7/38
U.S. Cl. 333—32 **3 Claims**

An improved antenna coupler including reactive elements for translating antenna impedance to a resistance load, and an autotransformer for transforming the resistance load to a resistive level for matching with the resistance of said radio

means, said autotransformer comprising a magnetic core and a coil having a plurality of turns, tap contacts to selected turns



of said coil and switch means for connecting one of said taps to said antenna and for connecting another of said taps to said inductive means.

3,775,708

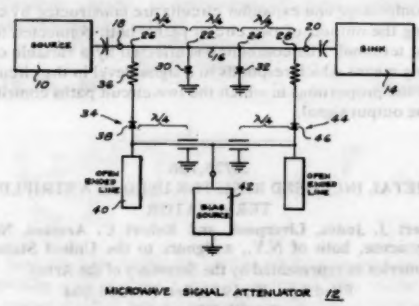
MICROWAVE SIGNAL ATTENUATOR

Thomas L. Sly, Clay, N.Y., assignor to Anaren Microwave, Incorporated, Syracuse, N.Y.

Filed Jan. 12, 1973, Ser. No. 322,914

Int. Cl. H01p 1/22

U.S. Cl. 333—81 A **7 Claims**



MICROWAVE SIGNAL ATTENUATOR 12

A microwave signal attenuator includes at least two diodes shunting to ground points separated by a quarter of a center-frequency wavelength on a transmission line. At a quarter center-frequency wavelength from each diode toward the input and output ports respectively, are connected first and second circuits respectively, comprising an impedance and a diode in series. Bias current is fed via each circuit, the transmission line and the two diodes to ground to controllably vary the resistance of the diodes in accordance with the desired attenuation.

3,775,709

IMPROVED OUTPUT WINDOW STRUCTURE FOR MICROWAVE TUBES

Gerard Firmain, and Guy Egloff, both of Paris 8eme, France, assignors to Thomson-CSF, Paris, France

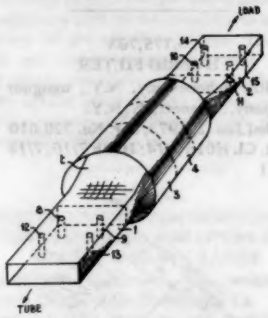
Filed Feb. 10, 1972, Ser. No. 225,250

Claims priority, application France, Feb. 23, 1971, 7106090

Int. Cl. H01p 5/08, 1/08

U.S. Cl. 333—98 P **6 Claims**

High-frequency tubes, such as klystrons or travelling wave tubes for example, producing high-power outputs within wide frequency bands by means of output devices comprising a dielectric window which ensures a seal between the evacuated enclosure of the tube and the load circuits which take the form of pressurized waveguides. This window is arranged in a waveguide section whose advantageously circular cross-section is larger than that of the output waveguide of the tube and that of the load waveguides, the connections between the waveguides being effected through junctions. The invention provides means which ensure to the thus constituted output device a resonance frequency equal to the centre frequency of



the operating band of the tube, and means which effect impedance-matching throughout this band.

3,775,710

PNEUMATIC TIMER ATTACHMENT FOR AN ELECTROMAGNETIC RELAY

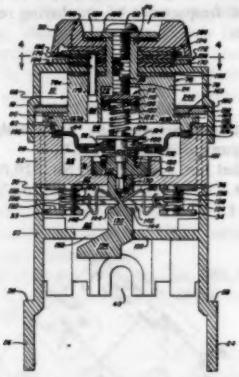
David Langman Cook, Swindon, England, assignor to Square D Company, Park Ridge, Ill.

Filed July 28, 1972, Ser. No. 276,273

Claims priority, application Great Britain, Aug. 6, 1971, 3,677/71

Int. Cl. H01h 7/03

U.S. Cl. 335—61 **13 Claims**



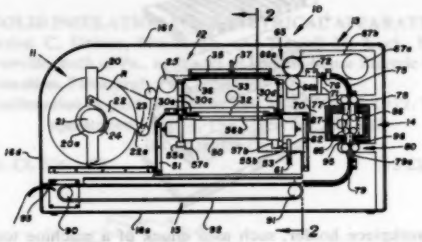
A timing chamber is defined by a flexible diaphragm having an exhaust port controlled by a valve. During the time period, air exters the timing chamber at a rate determined by relatively rotatable and facing timing discs defining a capillary path of variable length therebetween. The rate of entry of air into the timing chamber determines the time period by controlling the rate of return of the diaphragm to a normal position and a corresponding movement of a contact carrier to a normal position. The contact carrier has an offset foot portion which is engaged by a rocker driven by the armature of the relay to reset the timer. By mounting the timing attachment selectively in two different turned positions on a relay, time delay after energization or after de-energization of the relay is provided.

3,775,711

MICRO FILM DUPLICATING DEVICE

Dennis A. Burgess; Charles E. Alexson, and Ralph P. Jones, all of Minneapolis, Minn., assignors to Microm, a Division of Colight, Inc., Minneapolis, Minn.

Filed May 26, 1972, Ser. No. 257,135
Int. Cl. G03b 27/30
U.S. Cl. 355—100 23 Claims



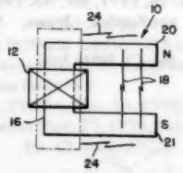
The disclosure is directed to a machine in which a roll of heat sensitive film is drawn across an exposing mechanism which uses a film carrier for holding the negative which is to be copied, the film and negative being held in contact with each other through the use of a pressure differential device. The film is exposed through the use of a mercury vapor lamp, the rays of which are controlled through a shutter surrounding the lamp. A pair of metering rolls moves the film past a cutter which cuts it to the proper length, at which time it is conveyed through a developer and upon emerging from the developer, an air knife cools the film where it is delivered through the use of a conveyor to a collecting station.

3,775,712

LATCHABLE MAGNETIC REED SWITCH

Larry L. Launt, Livonia, N.Y., assignor to Information Transfer, Inc., Holcomb, N.Y.

Filed Mar. 12, 1973, Ser. No. 339,718
Int. Cl. H01h 51/27
U.S. Cl. 335—153 5 Claims



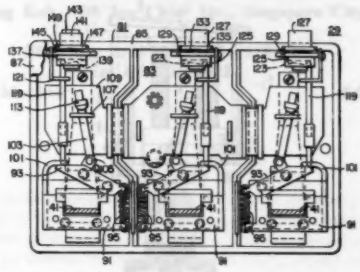
A U-shaped bar of so-called remanent magnetic material serves as a core for actuating one or more magnetic reed switches that are mounted between the legs of the U with their magnetic axes generally parallel with the bight of the U. Two coils are positioned around the bight of the U, one wound upon an axis parallel to the bight, and the other wound on an axis orthogonal to the bight. The switch, or switches are latched selectively and alternately in either their closed or open position, depending on which of the two coils is energized. The condition of the device may be sensed magnetically in a manner similar to the reading of magnetic memory devices.

3,775,713

CIRCUIT BREAKER WITH EXTERNALLY OPERABLE MEANS FOR MANUAL ADJUSTMENT AND MANUAL TRIPPING

Eugene J. Walker, and Robert H. Flick, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1972, Ser. No. 303,578
Int. Cl. H01h 71/74
U.S. Cl. 335—176 10 Claims



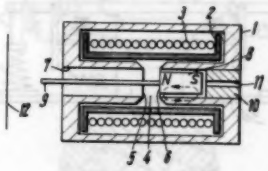
A circuit breaker is provided with externally accessible adjusting means manually operable to adjust the trip means of the breaker and manually operable to trip the breaker.

3,775,714

ELECTROMAGNETIC DRIVE FOR DATA INDICATOR

Hans Heuer, Heepen, Germany, assignor to Anker-Werke AG, Bielefeld, Germany

Filed July 6, 1971, Ser. No. 159,782
Claims priority, application Germany, July 6, 1970, P 20 33 378.2
Int. Cl. H01f 7/08
U.S. Cl. 335—230 10 Claims

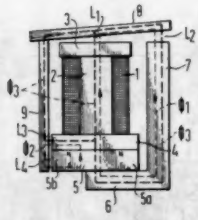


Electromagnetic drive for data indication includes a shell core-like magnet core, an excitation coil surrounding the magnet core, the magnet core having an inner sleeve-shaped core portion extending through the excitation coil, the inner core portion being formed with an air gap separating the inner core portion into two parts each formed with a magnetic pole, indicating means, and a plunger polarized in longitudinal direction thereof operatively connected to the indicating means, the plunger being freely displaceably disposed within the sleeve-shaped inner core portion and being displaceable from a neutral position thereof to a position wherein the indicating means are effective to provide an indication.

3,775,715
MAGNETIC SYSTEM FOR RELAYS

Werner Bosch, Munich, and Gerd Sticker, Stuttgart, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 31, 1972, Ser. No. 258,411
Claims priority, application Germany, July 7, 1971, P 21 33 931.1
Int. Cl. H01f 7/08
U.S. Cl. 335—230 11 Claims

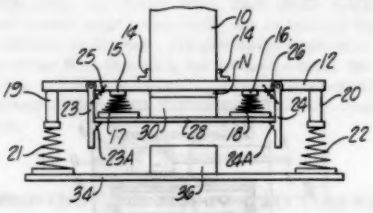


A magnetic system for relays, particularly poled relays, wherein at least one pole shoe covering a portion of a pole surface of a permanent magnet guides the magnetic flow of a particular region of the magnet primarily through a main armature, while the magnetic flow from another particular region of the permanent magnet is guided primarily by way of an auxiliary armature.

3,775,716
MAGNETIC ASSEMBLY HAVING LATCHING MEANS STORING ENERGY TO PRODUCE USEFUL WORK

John Hadjisky, Sofia, Bulgaria, assignor to Joann Stoyanova, Pasadena, Calif.

Filed Nov. 10, 1972, Ser. No. 305,613
Int. Cl. H01f 7/08
U.S. Cl. 335—253 9 Claims

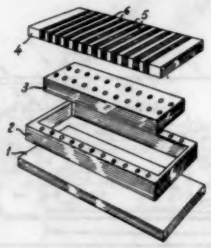


A magnetic device includes a means for producing a magnetic field associated with a first armature and a second armature each of which is associated with a corresponding helix volute spring that is compressed when the corresponding armature is magnetically attracted. The magnetic force developed between the first magnet and such means is only slightly greater than the force than being exerted by its then compressed volute spring. The second armature in its attracted position lessens the attractive force between the first armature and such means sufficiently below that force exerted by its volute spring such that the energy previously stored in such volute springs may be effective to propel the first armature together with the second armature away from such means.

3,775,717
PERMANENT-MAGNET HOLDER FOR FERROMAGNETIC WORKPIECES

Philibert Maurice Albert Braillon, 2, rue D'Alexandry, Chambery, France

Filed Apr. 27, 1972, Ser. No. 248,121
Int. Cl. H01f 7/04
U.S. Cl. 335—295 6 Claims

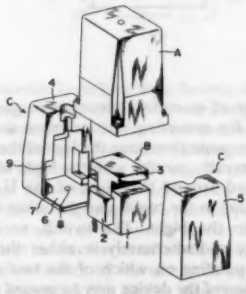


A workpiece holder, such as a chuck of a machine tool, comprises a magnetically permeable base plate, a face plate parallel thereto with alternating permeable and nonpermeable strip zones, and a working core flush with a surrounding frame sandwiched between the two plates. The face plate is divided into a multiplicity of alternately permeable and nonpermeable transverse strip zones. The core and the frame consist each of a nonmagnetic body traversed by throughgoing elements alternately constituted by bar magnets and by pole pieces, these elements forming an orthogonal array of rows and columns with each column paralleling a respective permeable strip zone of the face plate. By shifting the core — or segments thereof — relatively to the frame, the magnets of adjacent rows can be either aligned with or offset from one another. In the first instance the columns of aligned magnets are separated from the columns of aligned pole pieces by barriers formed by the nonpermeable strip zones of the face plate so that their flux must follow a path which is closed through a ferromagnetic workpiece overlying that plate; in the second instance the lines of force from the magnets of each column pass through a pole piece of the same column via a confronting permeable strip zone of the face plate so that the workpiece is released.

3,775,718
PLURAL-PART PROTECTIVE CASING FOR SOLENOID ASSEMBLY

Haruo Kanawa, Fujisawa, Japan, assignor to Yuken Kogyo Company Ltd., Fujisawa-shi, Japan

Filed Nov. 18, 1971, Ser. No. 199,871
Claims priority, application Japan, Nov. 20, 1970, 45/101907
Int. Cl. H01f 7/00
U.S. Cl. 335—278 7 Claims



The solenoid assembly of this invention is so designed and arranged that it can be assembled by enclosing an electromag-

netic device of the solenoid assembly consisting of coil, core, plunger and the like in a retainer casing made of resilient material, and by accommodating the assembly thus assembled in a cover in its entirety. Thereby, the solenoid assembly is easily assembled and dismantled. Mechanical shocks that may be caused during operation of the electromagnetic device can be absorbed by the resilient material, noises being lessened, and simultaneously the durability of the overall assembly can be remarkably improved.

3,775,719

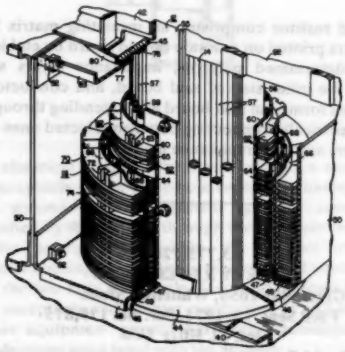
SOLID INSULATION FOR ELECTRICAL APPARATUS

Gordon C. Gainer, Pittsburgh, and Russell M. Luck, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 146,238, May 24, 1971. This application Apr. 14, 1972, Ser. No. 244,183

Int. Cl. H01f 27/12

U.S. Cl. 336—58 15 Claims



An improved thermally stable polymeric insulation for use in electrical apparatus and particularly in transformers operated in the presence of transformer oil is a substitute for the conventional cellulosic pressboard, which improved insulation consists of an isotactic polymeric hydrocarbon resin in at least partially crystalline form and cross-linked, 1,2-butadienes and copolymers having a low dielectric constant substantially matching that of the liquid dielectric and having relatively low swelling characteristics when immersed in hot liquid petroleum oil dielectric over an extended period of time.

3,775,720

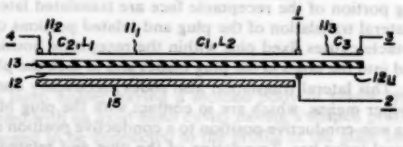
CAP-REACTOR POWER GROOVE BALLAST CIRCUIT

Oliver H. Winn, Cazenovia, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Division of Ser. No. 91,674, Nov. 23, 1970, Pat. No. 3,691,435. This application Mar. 27, 1972, Ser. No. 238,361

Int. Cl. H01f 27/28

U.S. Cl. 336—69 3 Claims



A cap-reactor power groove ballast circuit of the type including first and second, spaced-apart, elongated tape-like conductive foils having intervening layers of electrical insulation rolled together to form a compact cylindrical roll having combined capacitor-inductor-reactor characteristics. One of the spaced-apart conductive foils has its width separated into multiple, electrically isolated, strip-like separate foil areas coacting with the common remaining conductive foil to function in the manner of multiple capacitor-inductor components electrically interconnected in circuit relationship. By appropriate connection of terminal tap points to the structure, the device can be made to operate in the manner of a power groove ballast circuit having improved wave shaping characteristics.

3,775,721

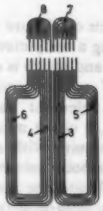
INDUCTIVE COMPONENTS

Chew Seng Koh, 108 Joo Chiat Ter., Singapore City, Singapore

Filed Aug. 4, 1972, Ser. No. 278,126

Int. Cl. H01f 27/24

U.S. Cl. 336—160 6 Claims



An inductive component having a central core comprises two stacks of U-shaped laminations disposed side by side so that the adjacent limbs constitute the central core. The outer limbs of the two stacks are bent towards the central core with the laminations at the ends of the outer limbs parallel to those of the central core.

3,775,722

MAGNETIC CORE STRUCTURES FOR INSTRUMENT TRANSFORMERS

Edward C. Wentz, Sharon; Belvin B. Ellis, Pulaski, and Angelo A. Delaurentic, Sharpsville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 1, 1972, Ser. No. 285,696

Int. Cl. H01r 27/24

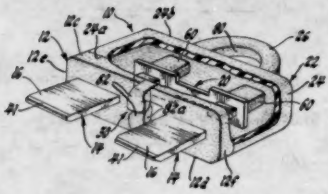
U.S. Cl. 336—178 5 Claims

A magnetic core having a plurality of lamination layers. Gaps are located in the lamination layers to reduce residual magnetic flux and are displaced from each other in adjacent lamination layers to form a stepped gap pattern across the magnetic core. A sheet of solid insulating material is disposed in the gaps formed by the lamination layers to maintain the length of the gaps.

3,775,723
CIRCUIT PROTECTOR

Michael S. Mamrick, Hubbard, and Cleothus Duncan, Jr., Youngstown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1973, Ser. No. 338,024
Int. Cl. H01h 85/58
U.S. Cl. 337—245 3 Claims

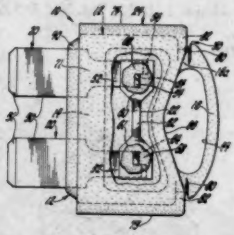


In a preferred form, this disclosure relates to an electric circuit protector comprising a body member made of an electrically insulating material and which is of a planar generally rectangular shape, a pair of spaced terminals carried by the body member, a metal fuse element having its opposite ends secured to the terminal, a cover means comprising a hollow cover shaped complementary with and in abutting engagement with one side of the body member to cover the rearward portion of the terminals and the fuse element and an outwardly extending handle integral with the cover to enable the circuit protector to be manually grasped, and cooperable means on the cover and the body member to retain the cover in place when positioned in abutting engagement with the body member.

3,775,724
CIRCUIT PROTECTOR

Michael S. Mamrick, Hubbard, and Edward M. Bungo, Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1973, Ser. No. 338,028
Int. Cl. H01h 85/58
U.S. Cl. 337—245 3 Claims

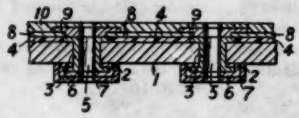


In a preferred form, this disclosure relates to an electric circuit protector comprising a generally planar body member made of an electrically insulating material and having a main body portion with a transverse opening therethrough and an integral handle portion at one side thereof, a pair of spaced terminals carried by the body portion, a metal fuse element having its opposite ends secured to the terminals, a generally rectangularly shaped hollow cover open at its opposite ends and which is slidably received over the body member to provide a covering for the opening and the fuse element, and cooperable detent means on the handle portion and the cover to detent and hold the cover in place on the body member.

3,775,725
PRINTED RESISTOR

Isunehiko Endo, Tokyo, Japan, assignor to Hokuriku Electric Industry Co., Ltd., Kaminilkawa-gun, Toyama-Prefecture, Japan

Continuation-in-part of Ser. No. 33,438, April 30, 1970, Pat. No. 3,648,364. This application Jan. 24, 1972, Ser. No. 220,094
Int. Cl. H01c 1/14
U.S. Cl. 338—262 7 Claims

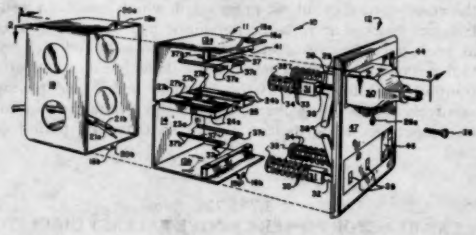


A printed resistor comprising an insulating matrix board, copper layers printed on one side of said board by etching and having predetermined patterns, impedance layers screen-printed on the other side of said board, and conductors applied in holes formed in said board and extending through said holes for electrically connecting between selected ones of said copper layers and said impedance layers.

3,775,726
SAFETY RECEPTACLE

Richard D. Gress, Box 1056, Whitefish, Mont.

Filed Sept. 13, 1971, Ser. No. 179,875
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 7 Claims



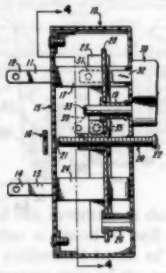
A safety receptacle constructed for use in conventional electrical junction boxes to accommodate standard electrical plugs. The construction of the receptacle prevents completion of an electrical circuit until a standard plug with holes in the ends of its blades is pushed into the receptacle. The plug engages a spring loaded block means therein, and the plug and a sliding portion of the receptacle face are translated laterally. The lateral translation of the plug and related portions of the receptacle causes fixed pins within the receptacle housing to extend into the holes in the plug blades and to lock the plug in place. This lateral translation also slides electrically conductive wiper means, which are in contact with the plug blades, from a non-conductive position to a conductive position on an electrical input bar. Translation of the plug and related portions of the receptacle back to their original position is required to unlock the plug. Translation also disconnects the wiper means from the electrical input bar and deactivates the receptacle.

3,775,727

ELECTRICAL ADAPTER FOR CONVERTING TWO-HOLE RECEPTACLE INTO THREE-HOLE RECEPTACLE WITH EQUIPMENT GROUND

Melvin Wise, 223 Bellewood Avenue, Dayton, Ohio

Filed Feb. 8, 1972, Ser. No. 224,582
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 11 Claims



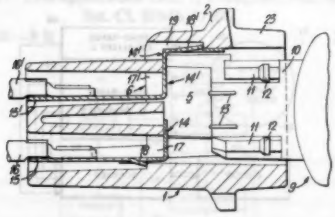
An electrical adapter which will convert a standard two-hole receptacle into a three-hole receptacle having an equipment ground. The equipment ground connection is established by the adapter through the two-hole receptacle by selective arrangements within the adapter utilizing the grounded housing or selectively the grounded neutral conductor of the two hole receptacle. Means to indicate the polarity of the receptacle and adapter conductors as well as indicating whether equipment ground has been established are additional features associated with the adapter.

3,775,728

LAMP HOLDER

Sergio Pitacco, Torino, Italy, assignor to ITT Industries, Inc., New York, N.Y.

Filed July 19, 1972, Ser. No. 273,067
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 6 Claims



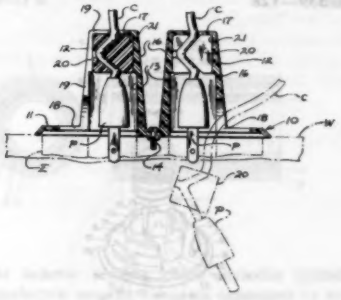
A lamp holder having a molded body of plastic material formed with an axial blind cavity having a shaped profile and arranged to be connected to the profile of the glass base of a lamp. The bottom of the holder has two electric contacts snap fixed and provided with deformable sheaths arranged to engage two insulated wires. The contacts also engage the base of the lamp holder and permit the electrical connection with the insulated wires of the same base.

3,775,729

SAFETY CORD PLUG ADAPTOR FOR ELECTRIC OUTLET BOXES

Raymond C. Casper, 1655 West Market Street, Stow, Ohio

Filed May 1, 1972, Ser. No. 249,079
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 P 6 Claims



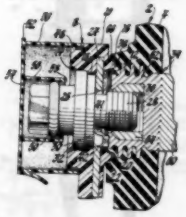
A safety protective cover for electrical wall outlet includes hollow housing, and means for releasably affixing same over at least one plug-in receptacle of outlet with plug-in electric cord extending from housing. Stop means on cord and housing, after plugging cord in receptacle and subsequent attachment of housing to wall outlet, effective independently of the plug to prevent unplugging of the same due to a child tugging on the cord.

3,775,730

CORROSION-PROOF BATTERY TERMINAL AND CABLE CONNECTOR THEREFOR

Garth A. Rowls, Muncie, Ind., and Elbert L. Johnson, Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 799,666, Feb. 17, 1969, abandoned.
This application Nov. 5, 1971, Ser. No. 196,026
Int. Cl. H01r *11/26*
U.S. Cl. 339—116 R 18 Claims



A side-terminal battery and cable connector therefor, which terminal is sealed in a case wall and includes a threaded socket having a sealing groove thereabout and which connector includes an elastomeric cap, a projection for sealingly mating with the groove around the terminal, a bolt for seating in the terminal socket turn-resistant means for preventing rotation of the connector and a second seal between the bolt and the cap.

3,775,731

BULB ASSEMBLY

Ernst Merki, Stuttgart; Otto Gorg, Rutesheim, and Joachim Grupp, Esslingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 18, 1972, Ser. No. 254,419

Claims priority, application Germany, May 19, 1971, P 21 24 930.9

Int. Cl. H01r 13/32

U.S. Cl. 339—128 13 Claims

A lamp socket assembly has a plastic housing and a transversal flange surrounding the same. Spaced resilient tabs are arranged on the flange for snapping into a cut-out of a reflector. Additional spaced tabs having shoulders at the extended ends thereof are arranged on the flange with spacers provided therebetween. The height of the additional tabs exceeds that of the spacers. A conductive bulb carrier for engaging the base of a bulb from one end of the housing is held between the shoulders and the ends of the spacers. A conductive resiliently mounted plug engages a center electrode of a bulb and urges the bulb into engagement with the conductive bulb carrier.

3,775,732

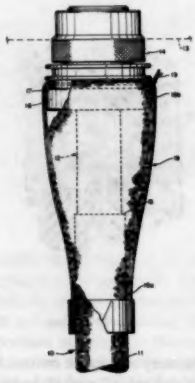
SHIELD TERMINATION DEVICE

Willard B. Frogner, Huntington, N.Y., assignor to Hitemp Wires Inc., Glen Cove, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,572

Int. Cl. H01r 13/46

U.S. Cl. 339—143 R 4 Claims



For purposes of making an electrical connection between a braided metal shield on a signal or power cable and an adaptor connecting the cable to a cabinet chasis, a shield terminator is provided in the form of a separate sleeve of metal wires braided in a number of plies to be fitted around the cable shield at one end and around the adaptor at the other end.

3,775,733

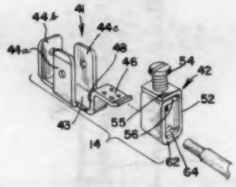
TERMINAL BLOCK AND TERMINAL CONNECTOR

Hans Ege, Des Plaines, Ill., assignor to Underwriters Safety Device Co., Chicago, Ill.

Filed Apr. 12, 1971, Ser. No. 133,006

Int. Cl. H01r 9/00

U.S. Cl. 339—198 R 7 Claims



The terminal block and terminal connector form part of a terminal block assembly in which one or more terminal blades of the terminal connector are located in one or more apertures of the terminal block for receiving thereon female quick-connect terminal connectors. The terminal blades are connected to a lug which, together with a collar type fastener is received in a cavity of the terminal block, into which a wire conductor can be inserted for the securing of the wire conductor to the lug for supplying electric potential to the blades. The terminal block also has an opening therein which communicates with the cavity and through which a tool can be inserted for fastening or unfastening a wire conductor to the terminal connector.

3,775,734

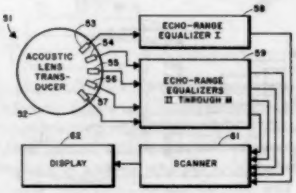
ECHO-RANGE EQUALIZER SONAR SYSTEM

Jesse L. Bealor, Jr., and John V. Lee, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1971, Ser. No. 142,835

Int. Cl. G01s 9/66

U.S. Cl. 340—3 A 13 Claims



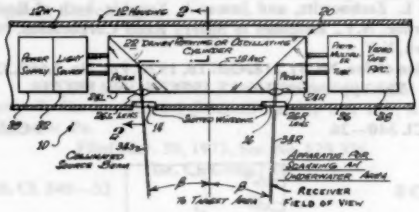
Disclosed is a multi-channel sonar system which includes a liquid-lens electroacoustical transducer, a transmitter, a receiver, and an echo-range equalizer circuit connected thereto for energizing said transmitter in such manner that all sea floor echoes of the acoustical target search signals broadcast by said transducer are received thereby at substantially the same time for all channels operating within predetermined range limits, regardless of the contour of said sea floor.

3,775,735

APPARATUS FOR SCANNING AN UNDERWATER AREA

Clarence J. Funk; Ivor P. Lemaire; Jerry L. Sutton, and Frederick A. Marrone, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 1, 1972, Ser. No. 249,059
Int. Cl. G01j 1/00
U.S. Cl. 340—4 R 10 Claims



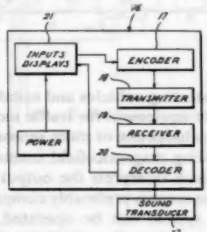
The apparatus of this invention is designed to be generally operated from either a towed or self-propelled underwater vehicle. A nearly collimated beam of light from a rotating cylinder traces a narrow strip of the target area during each rotation. The strip is substantially perpendicular to the direction of travel of the apparatus. During subsequent rotations, a series of parallel strips are traced on the target area. The speed of rotation and corresponding raster scan on the display monitor is synchronized to the forward speed of the vehicle to which the apparatus is attached. The instantaneous field of view of the receiving optics is stopped down so that only the light from a small area at the center of the intersection of the collimated source beam and the target area is viewed. The size of this area corresponds to the minimum resolution element of the device. The location of the field stop of the receiving optics is a function of the viewing range, and is adjusted accordingly. The automatic gain control on the output signal from the photomultiplier tube compensates for the varying propagation losses due to varying path lengths in the mapping geometry. The intensity displayed at a particular spot on the video monitor or stored at a given location on the video tape is therefore a map of the optical reflectivity of the corresponding spot on the surface of the target area.

3,775,736

ACOUSTICAL UNDERWATER CONTROL APPARATUS

Paul C. Koomey, Houston, Tex., assignor to Global Marine, Inc., Los Angeles, Calif.

Division of Ser. No. 504,742, Oct. 24, 1965, Pat. No. 3,405,387. This application Oct. 7, 1968, Ser. No. 765,425
Int. Cl. H04b 1/00
U.S. Cl. 340—5 R 2 Claims



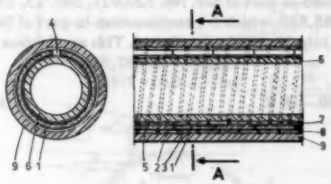
Apparatus for controlling the operation of underwater equipment from the surface by wireless signals and monitoring the status of the underwater equipment. A power source is provided for continuously supplying power to the underwater system. A minimal number of hard-line connections are provided between the surface and underwater units.

3,775,737

DEVICE FOR SENSING PRESSURE IN A LIQUID MEDIUM

Jean Laurent, Yvelines, France, assignor to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, Hauts-de-Seine, France

Filed Mar. 3, 1972, Ser. No. 231,676
Claims priority, application France, Mar. 3, 1971, 7107392
Int. Cl. G01v 1/16
U.S. Cl. 340—7 R 10 Claims



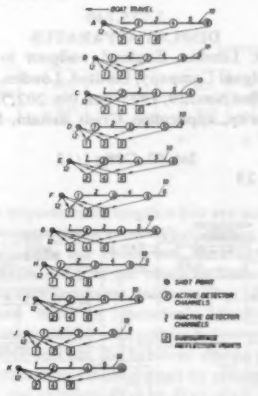
A flexible seismic sensing cable includes cylindrically shaped piezoelectric sensing elements separated by cylindrically shaped insulating spaces along the longitudinal axis of the cable. Spirally-wound conductors are disposed concentrically within and around the sensing elements and spaces to provide a voltage pick-off. A protective tubular housing transparent to acoustic waves surrounds the outer conductors, while an inner tube, filled with a fluid for forcing the conductors against the sensing elements, is positioned against the inner conductors.

3,775,738

SELECTIVE SEQUENTIAL INPUT SWITCHING METHOD FOR SEISMIC SURVEYING

Roy G. Quay, and William Harry Mayne, both of San Antonio, Tex., assignors to Petty Geophysical Engineering Company, San Antonio, Tex.

Filed Apr. 28, 1972, Ser. No. 248,535
Int. Cl. G01v 1/38, 1/36
U.S. Cl. 340—7 R 20 Claims



A method of seismic data acquisition wherein a recording system may be provided with fewer recording channels as compared with the number of groups of seismic wave detectors of a seismic spread, such as a seismic streamer adapted to be towed by a vessel through bodies of water. Switching means is provided that is capable of switching the recorder channels to receive signals from selected groups of detectors in a predetermined sequence, such as the even numbered then odd numbered detector groups, for example on successive shots occurring at selected group spacing to yield multiple observa-

tions of subsurface points spaced at the same interval as the group spacing of the streamer detectors with significant reduction in the volume of digital tape and digital processing necessary for purposes of horizontal shot stacking.

3,775,739

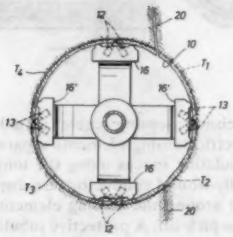
METHOD AND APPARATUS FOR DETECTING FRACTURES

Charles B. Vogel, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 520,021, Dec. 13, 1965, Pat. No. 3,585,580, which is a continuation-in-part of Ser. No. 128,167, July 31, 1961, abandoned. This application Jan. 20, 1971, Ser. No. 107,961

Int. Cl. G01v *1/40*

U.S. Cl. 340—18 R **10 Claims**



A method and apparatus for detecting vertically extending fractures in formations penetrated by a borehole, wherein a probing instrument having ultrasonic transmitting and receiving transducers is lowered into the borehole. The transducers are mounted in pads that are urged into contact with the wall of the borehole. The transducers are positioned and energized to generate and receive both longitudinal and transverse waves that travel circumferentially around the borehole. The presence of a vertical fracture is indicated by a reduction in the amplitude of the received transverse wave without a corresponding reduction in the amplitude of the longitudinal wave.

3,775,740

DISPLAY APPARATUS

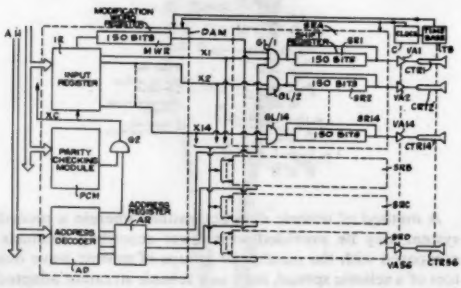
Colin Douglas, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

Filed Nov. 29, 1971, Ser. No. 202,929

Claims priority, application Great Britain, Dec. 22, 1970, 60708/70

Int. Cl. G08g *1/12*

U.S. Cl. 340—23 **3 Claims**



A train describer display apparatus displays train description information as a bright-up pattern of alphanumeric characters on the rasters of small cathode ray tubes by stepping a shift register operating with serial read-out in synchronism with the scanning circuits of the cathode ray tubes. The displayed data is changed by applying new information to a selected shift register from a store which is filled from a data highway, the data highway also operating in conjunction with an address highway to determine which cathode ray tube out of a selected group of cathode ray tubes is to receive a modified display.

3,775,741

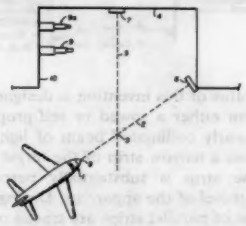
AIRCRAFT PARKING SYSTEM

Alvin L. Zechnowitz, and James A. Xenakis, both of Roslyn Harbor, N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 81,218, Oct. 16, 1970, Pat. No. 3,662,332. This application Dec. 22, 1971, Ser. No. 211,019

Int. Cl. G08g *5/02*

U.S. Cl. 340—26 **9 Claims**



Apparatus for accurately maneuvering an aircraft on an airport surface to a predetermined parking position involves cooperating optical sensors and guidance display systems for aiding the pilot in controlling motion of the craft. The apparatus aids moving the craft along a preliminary guidance or approach path to intersection of a second guidance path leading the craft precisely to a final stopped position at the parking station.

3,775,742

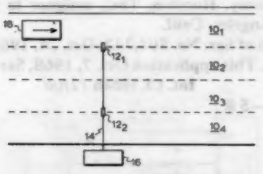
VEHICLE DETECTION SYSTEM

and Martin C. Henderson, Canoga Park, all of Calif., assignors to Canoga Controls Corporation, Canoga Park, Calif.

Filed Sept. 18, 1972, Ser. No. 290,127

Int. Cl. G08g *1/097*

U.S. Cl. 340—38 L **21 Claims**



A system for detecting vehicles and suitable for use in conjunction with other equipment for traffic monitoring and control. The system includes one or more sensors capable of measuring and indicating magnetic field intensity and a central electronic unit which interprets the output signals produced by the sensors. The sensors preferably comprise flux gate magnetometers. The system can be operated in either of two modes; i.e. a "between lanes" mode (I) in which each sensor is mounted adjacent to a lane being monitored and an "in lane" mode (II) in which each sensor is mounted in a lane being monitored. In mode I the central unit produces a detect output signal in response to a magnetic field intensity reduction, as would be caused by a vehicle passing in a monitored lane, which exceeds a first threshold level. In mode II, the detect output signal is produced in response to a sensed magnetic

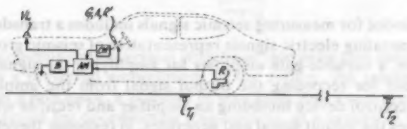
field intensity increase, as would be caused by a vehicle passing in a monitored lane, which exceeds a second threshold level. Both the first and second threshold levels are established as some percentage of the ambient magnetic field intensity. A bias signal, developed as a function of the sensed ambient field intensity, is fed back to the sensors to null their output under quiescent conditions, thus enabling the system to automatically adapt to different ambient field conditions. Time delay means are incorporated in the feed back loop producing the bias signal to prevent the system from adapting to short term magnetic field changes.

3,775,743

AUTOMATIC VEHICLE DRIVER AID SYSTEM

Harry R. Carter, Roaring Brook Township Box 189, R.D. 2, Moscow, Pa.

Filed Mar. 30, 1971, Ser. No. 129,376
Int. Cl. G08g 1/09
U.S. Cl. 340—32 **8 Claims**



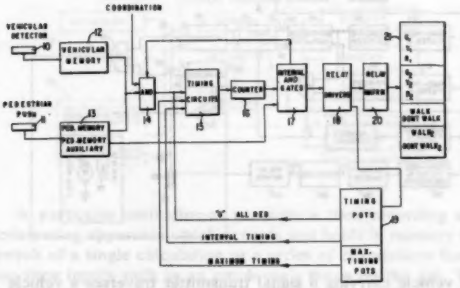
An automatic driver aid system for a vehicle which includes means to alert the driver of approaching conditions and regulations requiring his caution, such as stop signs, school caution zones, dangerous intersections, etc., and means to warn the driver upon violation of certain traffic regulations such as speed limits, emergencies, etc.

3,775,744

TRAFFIC CONTROLLER WITH BINARY COUNTER

Philip Cane, Brooklyn, N.Y., assignor to The Marblelite Company, Inc., Brooklyn, N.Y.

Division of Ser. No. 702,012, Jan. 31, 1968, Pat. No. 3,594,720. This application Mar. 29, 1971, Ser. No. 128,883
Int. Cl. G08g 1/09
U.S. Cl. 340—44 **6 Claims**



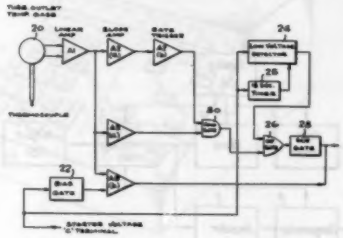
A controller for traffic lights employing solid state components and providing both vehicular and pedestrian control. Cross street controls initiate operation of a binary counter sequentially to operate signal lights through predetermined time intervals. Interconnecting circuits provide for coordination with other signal lights, vehicle extension intervals, recall and resetting controls. An auxiliary memory circuit operates to distinguish between vehicle only and pedestrian operation.

3,775,745

ENGINE OVER-TEMPERATURE WARNING SYSTEM

Archie P. Kelley, Scottsdale, Ariz., assignor to David L. McPherson, San Diego, Calif.

Filed Feb. 3, 1972, Ser. No. 223,195
Int. Cl. B60q 5/00
U.S. Cl. 340—57 **4 Claims**



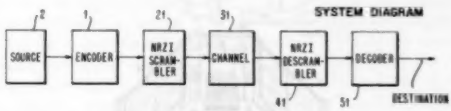
An engine over-temperature warning system is especially, although not exclusively, adapted for use in turbine powered helicopters. The system comprises a solid state electronic circuit which is constructed to monitor engine temperatures, and other parameters, so as to provide a warning to the pilot, not only when permissible engine temperatures have been exceeded during starting or in-flight operations, but also when other conditions have occurred which inevitably would lead to engine overheating, so that corrective measures may be taken.

3,775,746

METHOD AND APPARATUS FOR DETECTING ODD NUMBERS OF ERRORS AND BURST ERRORS OF LESS THAN A PREDETERMINED LENGTH IN SCRAMBLED DIGITAL SEQUENCES

Paul E. Boudreau, Raleigh, N.C.; Robert T. Chien, Urbana, Ill., and Charles C. Peck, Whitehall, S.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1972, Ser. No. 254,975
Int. Cl. G06f 11/12
U.S. Cl. 340—146.1 AL **10 Claims**



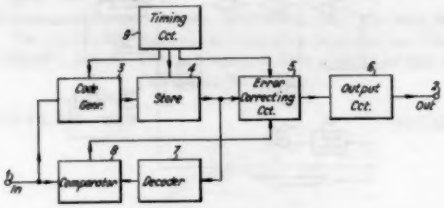
If digital data sequences of length n bits are successively encoded for protection against error by appending to each block of n bits in a sequence of r check bits, the r check bits being calculated from the n bits of the block by iteratively dividing the data stream, by a generator polynomial $g(x)$ prior to each transmission and then by iteratively dividing the data sequence and remainder by a scrambler polynomial $S(x)$, then the apparent error $E(x)$ at the receiver due to channel error $e(x)$, after descrambling (multiplying) by polynomial $S(x)$, is represented by the relation $E(x) = S(x)\ e(x)$. When scrambling polynomial $S(x)$ is of the form $S(x) = 1 + x$, then each channel error is replaced by two adjacent errors, hence $E(x) = (1 = x)\ e(x)$. All single and odd errors are nevertheless detectable in such circumstances by modifying $g(x)$ such that $g(x) = (1 + x)^{m+1}\ t(x)$. Furthermore, burst type channel error of length $\geq b$ is detectable, in addition to all single and odd errors, if the scrambler polynomial $S(x)$ assumes the form $S(x) = (1 + x)^m f(x)$ and the generator polynomial is modified so that $g(x) = (1 + x)^{m+1}\ t(x)$ where $f(x)$ and $t(x)$ are polynomials having an odd number of terms and relatively prime and $t(x)$ is of degree $\geq b$.

3,775,747

ERROR CORRECTING ENCODER

Malcolm Edward Gabriel, Basildon, England, and David John Anderson, Eemnes, Netherlands, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 17, 1972, Ser. No. 299,509
Int. Cl. H03k 13/34
U.S. Cl. 340—146.1 R 15 Claims



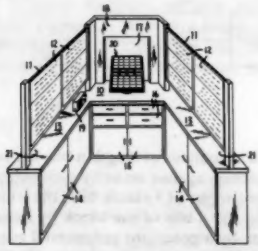
This relates to an error correcting PCM encoder. The encoder is of the feedback comparison type. Logic circuitry is employed to make error corrections toward the end of the encoding cycle. The encoder receives an analog input signal carrying information to be coded. The encoder produces an initial code signal representative of the information to be coded. An analog replica of the initial code signal is compared with the analog input signal. An error signal is produced if the analog input signal and the analog replica of the initial code signal differ. The initial code signal is corrected in response to the error signal to produce an error corrected output code signal.

3,775,748

SYSTEM AND DEVICE FOR THE EFFICIENT CONTROL AND DOCUMENTATION OF DATA IN COMPUTER INSTALLATIONS

Hanns G. Stenger, 70–11 34th Avenue, Jackson Heights, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,434
Int. Cl. G08b 3/10
U.S. Cl. 340—152 R 4 Claims



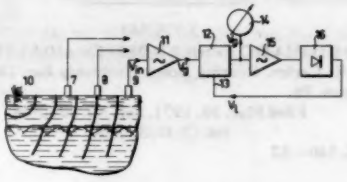
Efficient, effective and thorough control over and documentation of data received, utilized and completed in form for delivery in computer installations is provided by the system and device of the invention. Utilizing the system and device provided, a single, central controller is able to control and document such data from the moment it is received in the installation to the time it is picked up for delivery. The system provides for control of data so that any delays encountered in running a job can be brought immediately to the attention of the central controller who can then alter or re-schedule the times for running the jobs programmed for the computers. In addition, the central controller is provided with a device which enables him to immediately determine the status of any job being run or scheduled to be run.

3,775,749

DEVICE FOR MEASURING SEISMIC SIGNALS

Ruben Tegholm, Johanneshov, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation of Ser. No. 795,803, Feb. 3, 1969, abandoned.
This application Sept. 14, 1970, Ser. No. 72,134
Claims priority, application Sweden, Feb. 2, 1968, 1417/68
Int. Cl. G01v 1/18
U.S. Cl. 340—15.5 GC 4 Claims



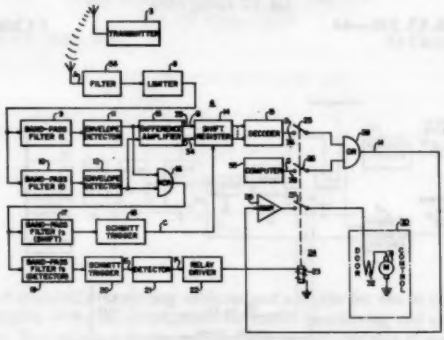
A device for measuring seismic signals includes a transducer for generating electric signals representative of seismic ground motion, a variable-gain amplifier for amplifying the signals, a recorder for recording the output signal from the amplifier and a control device including an amplifier and rectifier which receives the output signal and generates, in response thereto, a gain-control signal, the magnitude of which varies with respect to the frequency of the output signal such that the gain of the amplifier and the voltage applied to the recorder decreases with increasing frequency of the signals.

3,775,750

VEHICLE CONTROL SYSTEM, A METHOD OF AND APPARATUS FOR PROVIDING AN INTERLOCK CONTROL SIGNAL

David H. Woods, Marina Del Ray, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1972, Ser. No. 235,722
Int. Cl. H04q 9/00
U.S. Cl. 340—171 R 3 Claims

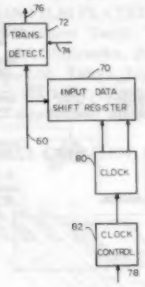


A vehicle carrying a signal transmitter traverses a vehicle travel path. A plurality of stations are located at predetermined intervals along the travel path, and each such station includes interlock means. The vehicle transmits a plurality of coded command signals, including an interlock command signal. Decoding means decode the interlock command signal, and detector means provide an enable signal in response to the provision of any one of the coded command signals. An interlock control signal is provided for controlling the operation of the interlock means in response to the concurrent provision of a decoded interlock command signal and the enable signal.

3,775,751
METHOD OF AND APPARATUS FOR BAUD RATE DETECTION

Duane H. Anderson, 2292 West Laurie Road, Roseville, Minn.

Filed Mar. 17, 1972, Ser. No. 235,836
Int. Cl. G06f 3/04; H04j 7/00
U.S. Cl. 340—172.5 5 Claims

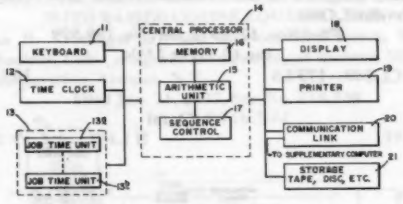


A communication system with baud rate detection capability. In a preferred embodiment of the system, the system includes a processor, a plurality of terminals, and a communication device for coordinating transmission, at a variety of baud rates, of messages between the processor and terminals. The signal by which each message is transmitted includes in the initial portion thereof a baud-rate-code as represented by at least one time interval between signal state transitions. The communication device detects the signal state transitions representative of the baud-rate-code and the time of occurrence of each such detected transition is recorded. From a pair of recorded times, a transition interval is computed and the baud rate corresponding to the computed time interval is determined.

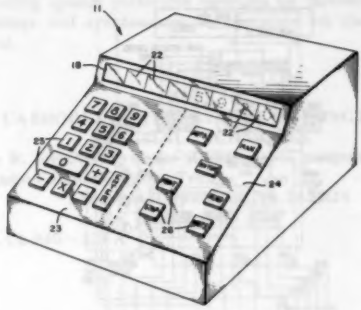
3,775,752
JOB TIME RECORDING AND CALCULATING METHOD AND APPARATUS

John L. Lorenzo, 1 West Gilbert Road, Southbury, Conn.

Filed June 12, 1970, Ser. No. 45,689
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 10 Claims



A particular embodiment provides a time recording and computing apparatus which accepts and holds in memory the result of a single calculation or a series of calculations based on time inputs such as an employee's hours on the job. The calculations may be based on differentials from a first time indication derived from an input device, e.g. a coded card or keyboard and a second time indication from the same or similar device. The system calculates and holds in memory the differences in time inputs for each particular input. The apparatus is arranged to display, to print out or store on other media such as magnetic tape, punched tape, etc., information computed from the time inputs so that an entire payroll may be processed automatically for a variety of employee grade levels. Also, time chargeable to a particular job may be displayed, printed out, or stored at any stage in the job, thereby preventing excessive time allocations to that job. Being thus alerted, further expenditures of time beyond that permissible

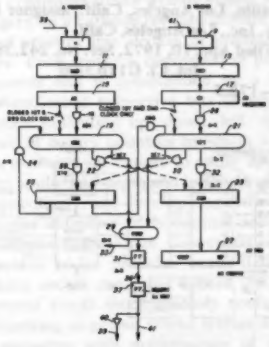


for that job may be stopped. Also, a more accurate record of labor expended for a particular job is available for future bidding on similar jobs.

3,775,753
VECTOR ORDER COMPUTING SYSTEM

William D. Kastner, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 4, 1971, Ser. No. 103,629
Int. Cl. G06f 7/20, 7/34
U.S. Cl. 340—172.5 2 Claims



A computing system is specifically adapted for the performance of vector operations. A computing system takes two vector streams and orders the elements of those vector streams into a single ordered vector stream. Each vector stream is received in a different receiver register with each vector being clocked down through the computing system. The elements of the vector streams are compared and ordered into a single ordered vector stream.

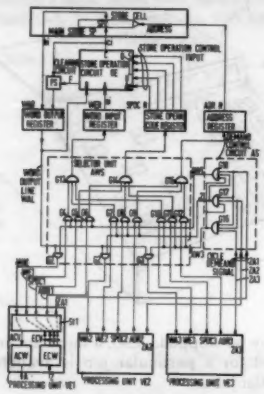
3,775,754
DIAL-OPERATED DATA EXCHANGE SYSTEM

Heinz Auspurg, Forstenrieder Allee 208, and Hans-Ulrich Moder, Albert Robhaupter Strabe 3a, both of Munich, Germany

Continuation-in-part of Ser. No. 870,298, Sept. 11, 1969. This application Mar. 10, 1972, Ser. No. 233,662
Claims priority, application Germany, Apr. 10, 1968, 5394
Int. Cl. G06f 9/00, 3/04
U.S. Cl. 340—172.5 4 Claims

A data exchange system of the dial-operated type having a central store to contain the operating relationships between the feeders and trunks of the system, and in which exchange

functions are effected through special storage operations of the central store. The special storage operations are caused to be carried out between the read-out and write-in operations of



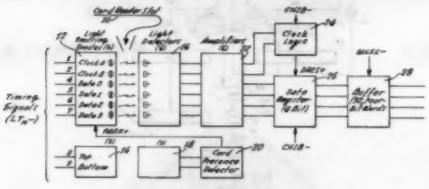
a storage cycle, both to speed up operations and to prevent destruction of stored data by seizure of the system by a priority control unit.

3,775,755

APPARATUS AND METHOD OF CODING INFORMATION

John R. Scantilin, Los Angeles, Calif., assignor to Transaction Technology, Inc., Los Angeles, Calif.

Filed Apr. 10, 1972, Ser. No. 242,382
Int. Cl. G11b *5/00*
U.S. Cl. 340—172.5 **20 Claims**



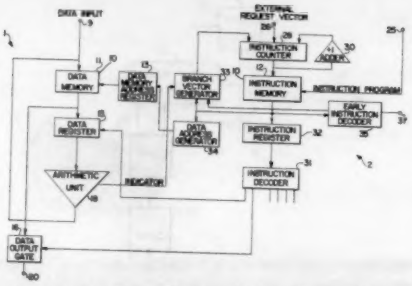
An apparatus and method of recording and reproducing information on a recording medium including recording at least a first track of encoded data information and with the data information occurring at first regular intervals along the recording medium and recording a second track of clock information and with the clock information occurring at second regular intervals along the recording medium and with the second regular intervals occurring no more than every other one of the first regular intervals. The encoded data information on the first track is reproduced and stored and with the reproduction and storage controlled in accordance with the reproduction of the clock information in the second track. The second track of clock information is reproduced by at least a pair of spaced sensors for successively reproducing the clock information along the second track and with the reproduction of the clock information successively alternating between the sensors and wherein the reproduction and storage of the encoded data information is controlled by the successive alternating reproduction by the pair of sensors so that each portion of the encoded data information occurring at the first regular intervals is not reproduced and stored until both sensors have alternately reproduced clock information.

3,775,756

PROGRAMMABLE SPECIAL PURPOSE PROCESSOR HAVING SIMULTANEOUS EXECUTION AND INSTRUCTION AND DATA ACCESS

Charles B. Baiser, New Hartford, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed July 20, 1972, Ser. No. 273,575
Int. Cl. G06f *9/06*
U.S. Cl. 340—172.5 **7 Claims**



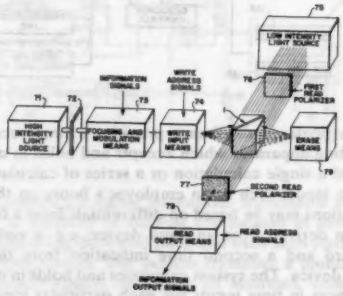
In a programmable special purpose processor for an input/output controller, data and data moving instructions are respectively stored in data and instruction memories rather than in one memory. While a data word is accessed from a data register to an arithmetic unit in response to a data moving instruction, an instruction counter is updated to direct the subsequent instruction to be delivered to an instruction register to prepare the processor to perform its next data moving operation. At the same time, in response to a data memory address register, a next data word is accessed from a data memory to the data register. At the beginning of the next cycle, the processor is prepared to execute the next instruction. Consequently, the processor operating speed is increased since data words and instructions need not be sequentially accessed during a cycle.

3,775,757

LIQUID CRYSTAL MEMORY, SYSTEM UTILIZING THE MEMORY AND METHODS OF CONSTRUCTING AND OPERATING SUCH A MEMORY

Ted R. Taylor, Stow, and James L. Fergason, Kent, both of Ohio, assignors to International Liquid Xtal Company, Cleveland, Ohio

Filed Nov. 17, 1971, Ser. No. 199,599
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LS **10 Claims**



The unique properties of the Smectic C-phase of a liquid crystal are used to store information represented by the bistable orientation directions of molecular axes. Groups of

molecules contained between transparent surfaces which are treated in a particular manner to develop optical homogeneity are used as storage elements. The information state of the storage element is set by causing the molecular axes within the element to assume either a first or a second stable orientation of the axes. Various methods for reading, writing and erasing information stored in this manner are disclosed.

3,775,758

MAGNETIC THIN FILM PLATED WIRE MEMORY

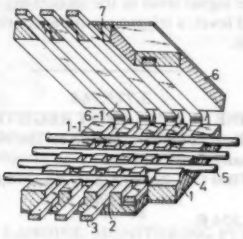
Seihin Kobayashi; Michihiro Torii; Takehiko Jojima, and Masanao Okuda, all of Shizuoka, Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1971, Ser. No. 190,891

Claims priority, application Japan, Oct. 28, 1970, 45/107157

Int. Cl. G11c *11/04, 11/14*

U.S. Cl. 340—174 VA **3 Claims**



A magnetic thin film plated wire memory is provided which comprises a first magnetic keeper covered with a second magnetic keeper, both keepers having high magnetic permeability. The first magnetic keeper is provided in its upper surface with a number of deep and shallow grooves intersecting at right angles with each other, said deep and shallow grooves each containing therein a driving wire and a magnetic wire, respectively. The second magnetic keeper has a number of parallel grooves on its lower surface in the same direction as and directly above the deep grooves in the first magnetic keeper, said parallel grooves containing therein conductive wires which are electrically connected at one end thereof to the conductive wires in the deep grooves in the first magnetic keeper.

3,775,759

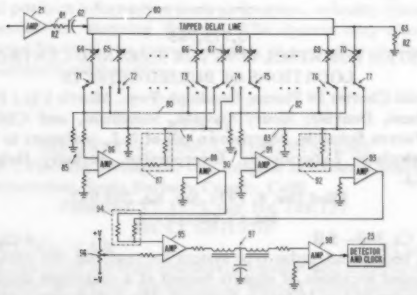
MAGNETIC RECORDING AND READBACK SYSTEMS WITH RAISED COSINE EQUALIZATION

John D. Armitage, Jr., and Maxwell R. Cannon, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,738

Int. Cl. G11b *5/44*

U.S. Cl. 340—174.1 H **19 Claims**



Detectability of readback signals from a digital signal magnetic recorder is enhanced by employing filtering techniques effecting raised cosine output signal characteristics. In a preferred form, the recording system is linearized, such as by applying an AC bias to the recording signal. Included are filtering actions having inverse sinc (noise whitening) and inverse channel characteristics. The digital detector for the recording system preferably operates on threshold or zero crossings and synchronizes its operation on the readback signal.

3,775,760

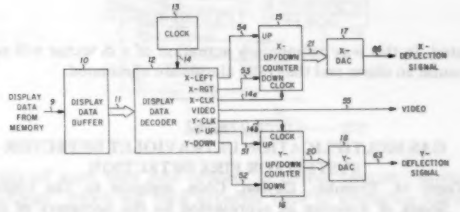
CATHODE RAY TUBE STROKE WRITING USING DIGITAL TECHNIQUES

Lyle R. Strathman, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Apr. 7, 1972, Ser. No. 242,024

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **7 Claims**



A digitally controlled stroke writing system for displaying a selected imagery on a cathode ray tube defines the imagery as a sequence of straight line strokes of predetermined length and line slope. Each stroke is comprised of plural clock rate defined segments and is commanded by a five-bit binary stroke command word respective bits of which selectively command beam deflection up, down, left, right and video on/off. A pair of binary counters to which a clock defined pulse train is available are caused to count up, down, or hold in response to applied up-down and left-right stroke command word bits, respectively, and develop respective moving digital deflection codes definitive of horizontal and vertical beam deflections. Digital-to-analogue conversion of the running digital deflection codes provides beam deflection signals, while the video on/off command bits of the five-bit binary stroke command words simultaneously control cathode ray tube beam blanking to permit stroke retrace segments within the stroke sequence with maintenance of uniform image brightness. Sloped stroke lines may be selectively defined by control of the ratio of repetition rates of the clock defined pulse trains applied to the respective binary counters.

3,775,761

FIRE DETECTING SYSTEM WITH SPURIOUS SIGNAL REJECTION

Akihiro Kobayashi, Fujisawa-shi, and Akira Yokota, Tokyo, both of Japan, assignors to Nittan Company, Limited, Tokyo, Japan

Filed Mar. 30, 1972, Ser. No. 239,633

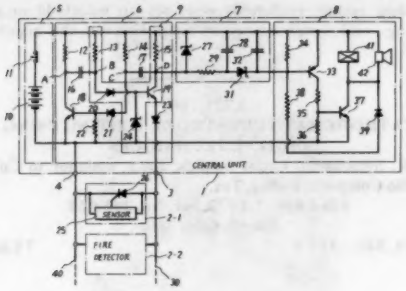
Claims priority, application Japan, Apr. 15, 1971, 46/23446

Int. Cl. G08b *17/06*

U.S. Cl. 340—228 R **2 Claims**

A fire detecting system having a plurality of fire detectors connected across conductors for applying a voltage thereto. The detectors each include switching means which is closed upon operation of a detector and opened upon reduction of the voltage on the conductors below a predetermined value. Voltage is supplied to the conductors by means which responds to the actuation of one or more detectors to automatically lower the conductor voltage below said predeter-

mined value and then raise it again. After a predetermined number of cycles of operation an alarm is automatically actu-



ated. In this way momentary actuation of a detector will not sound an alarm and thus false alarms are eliminated.

3,775,762

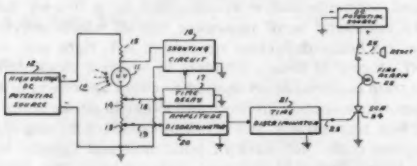
GAS MULTIPLICATION ULTRAVIOLET DETECTOR SYSTEM FOR FIRE DETECTION

Terry M. Trumble, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Sept. 15, 1972, Ser. No. 289,713

Int. Cl. G08b *17/06*

U.S. Cl. 340—228 R **6 Claims**



A fire detection system using an ultraviolet gas multiplication detector, an amplitude discriminator to differentiate between a fire and cosmic radiation, and a time base discriminator to differentiate between a fire and background noise, provides a sensitive, highly reliable, fire detecting system.

3,775,763

APPARATUS FOR INDICATING THE IMPENDING FAILURE OF A JET ENGINE

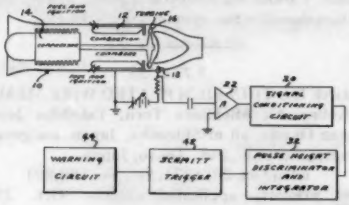
Robert P. Couch; Dennis R. Rossbach, both of Dayton, Ohio; Robert A. Vopalensky, Albuquerque, N. Mex., and Robert T. Fowler, K I Sawyer AFB, Mich., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Mar. 7, 1972, Ser. No. 232,403

Int. Cl. G08b *21/00*

U.S. Cl. 340—236 **3 Claims**

An apparatus, for indicating impending failure of jet engines, having an electrostatic probe in the exhaust of the jet engine with the probe signal being applied to a circuit for providing pulses, at the amplitude of a signal in a sample and hold circuit, for each positive going signal followed by a negative going signal. A pulse height discriminator provides uniform output pulses, for each pulse exceeding the integrated engine noise level, and applies its output to a smoothing cir-



cuit. When the signal level in the smoothing circuit exceeds a predetermined level, a trigger circuit is operated to energize a warning circuit.

3,775,764

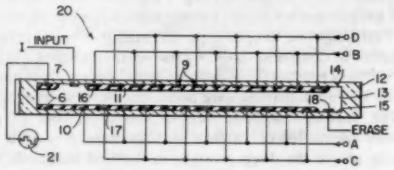
MULTI-LINE PLASMA SHIFT REGISTER DISPLAY

Jai P. Gaur, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 2, 1972, Ser. No. 294,006

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 R **11 Claims**



In the present invention at least two rows of plasma charge transfer devices have their holding arrays of electrodes connected to a common sequential potential source while the stepping and entering arrays of each row are connected to independent sequential potential sources. Each independent source is controlled by a logic means, such that an input character signal, applied to all the rows of transfer devices, will only be entered and stepped through those rows that are selected by the logic means for having the sequential potential applied to their stepping and entering arrays. Signals already entered in the rows not selected will be held in place.

3,775,765

SYSTEM FOR RESOLVING THE SIZES AND CENTROID LOCATIONS OF BURIED OBJECTS

Gerald Charles Di Piazza, Randolph Twp., Morris Cty.; Peter Onno, Denville; Henry Oswald, Mendham, and Clifford Warren Schaible, Morristown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

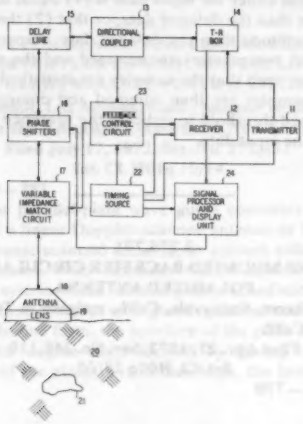
Filed Dec. 8, 1971, Ser. No. 205,937

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 R **4 Claims**

A broadband, radar-type system for resolving the sizes and centroid locations of objects buried at a maximum depth in the order of 6 to 10 feet is disclosed. The system uses a carrier frequency which is high enough so that an instantaneous bandwidth of about 25 percent provides resolution in the order of 1

foot. The system antenna includes impedance matching and focusing means. Polarization diversity of the transmitted beam



may be accomplished to distinguish between elongated and generally round objects.

3,775,766

INDEPENDENT LANDING MONITORING PULSE RADAR SYSTEM

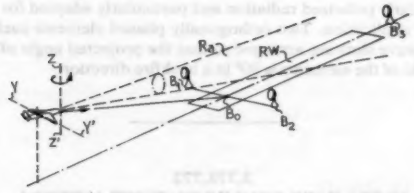
Robert Gendreu, and Jean Genuist, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 11, 1972, Ser. No. 217,071

Claims priority, application France, Feb. 4, 1971, 7103732

Int. Cl. G01s 9/00

U.S. Cl. 343—5 LS **8 Claims**



An Independent Landing Monitoring pulse radar system supplying angular information similar to these supplied by an I.L.S. system comprising circuits for improving the precision of the supplied data through compensation of the dynamic computation errors due to the aircraft displacement between successive data measurements, and circuits supplying additional position information such as location, velocity distance and estimated stopping distance. The system may also be operated for synthetic runway display, as a weather and as an anti-collision radar system.

3,775,767

AIR-TRAFFIC REGULATING SYSTEMS

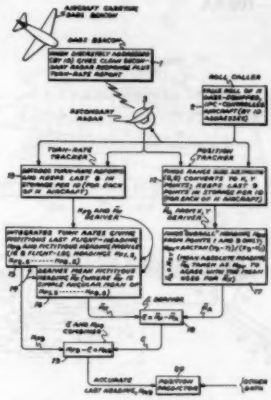
John C. Fielding, Arlington, Va., assignor to General Research Corporation, Santa Barbara County, Calif.

Filed Jan. 17, 1972, Ser. No. 218,137

Int. Cl. G01s 9/56

U.S. Cl. 343—6.5 R **4 Claims**

An improved position-prediction method and subsystem to permit better ground prediction of aircraft future position is disclosed. It is proposed for use in air traffic control systems which offer an IPC (intermittent positive control) service to all VER aircraft which carry the not yet standardized DABS beacon (a planned discretely-addressable variant of present radar-response beacons which is to include automatic reception and display of ground-to-air commands). Disclosure proposes that this planned new beacon should include modest cost means to report turn rate periodically and that a string of successive radar fixes be data processed with a corresponding



string of such turn rate reports to derive aircraft "flight-headings" which are both accurate (due to averaging many noisy radar fixes over many seconds of time) and very current by virtue of the turn rate reports which effectively remove the long lag resulting from such averaging. The disclosure shows five different methods and means to process such data so as to derive accurate current "flight-headings" and to predict future positions based thereon.

3,775,768

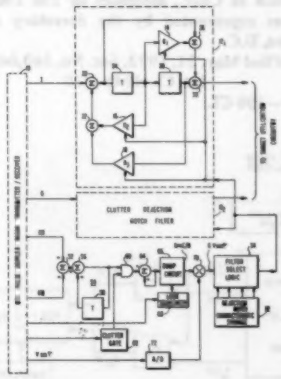
ADAPTIVE MTI CLUTTER FILTER

Hampton H. Lisle, Crownsville, and Robert B. Hughes, College Park, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1971, Ser. No. 204,824

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7 **7 Claims**

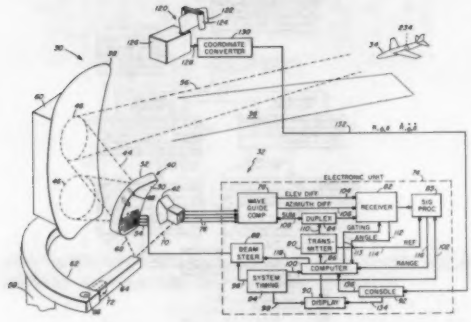


A system for enhancing AMTI radar target velocity (Doppler) visibility in reduced clutter to noise environment by utilizing MTI filters selectively coupled into the system whose rejection characteristic is chosen as a function of clutter amplitude level as well as bandwidth whereby excessive signal rejection is not introduced with consequent target invisibility.

3,775,769
PHASED ARRAY SYSTEM

Vernon L. Heeren, Wayland; James M. Howell, Hudson, and C. Dale Reis, Boxborough, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 4, 1971, Ser. No. 186,128
Int. Cl. H01 *3/26*
U.S. Cl. 343—100 SA 24 Claims

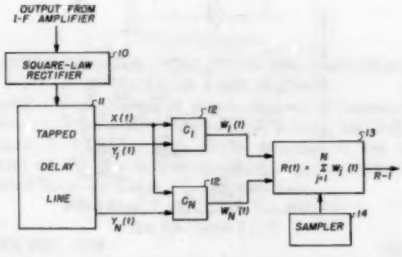


A phased array antenna utilizing a parasitic reflector in which the area of the array of radiating elements is smaller than the area of the reflector. The reflector has a concave surface which, in one embodiment of the invention, is a hyperbola of revolution for collimating the rays of radiation incident thereupon from the array of radiating elements. The surface of the reflector is particularly adapted to permit the generation of a set of phase shift command signals by means of a novel ray tracing program to provide a collimated beam which may be scanned in response to the phase shift imparted through radiation radiated by the radiating elements. A narrow beam of radiation is obtained by virtue of the relatively large sized reflector even though the dimensions of the array of radiating elements are relatively small.

3,775,770
METHOD AND MEANS FOR PERFORMING DISTRIBUTION-FREE DETECTION OF SIGNALS IN NOISE

George M. Dillard, San Diego, and Charles E. Antoniak, El Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1972, Ser. No. 240,065
Int. Cl. H04b *1/10*
U.S. Cl. 343—100 CL 9 Claims

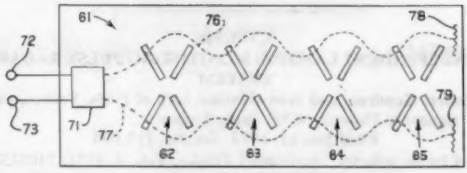


Input data representative of a variable environment including both signals and noise is delayed by multiple equal delay increments to generate identical multiple versions in delayed form, the time period of the delay increments being chosen to produce delayed data that are statistically independent. A selected version of the input data is compared with each other version, including the delayed data, in multiple comparators each of which is operative to produce first and second outputs indicating that either the input data is (1) equal to or greater in amplitude than the delayed data, or that (2) the input data is less in amplitude than the delayed data, respectively. The outputs of all comparators are summed and the sum is sampled at a rate such that the samples are statistically independent. The samples are then summed and compared with a predetermined threshold to indicate the presence or absence of signal in the input data.

3,775,771
FLUSH MOUNTED BACKFIRE CIRCULARLY POLARIZED ANTENNA

James P. Scherer, Sunnyvale, Calif., assignor to Textron Inc., Belmont, Calif.

Filed Apr. 27, 1972, Ser. No. 248,110
Int. Cl. H01q *13/10*
U.S. Cl. 343—770 7 Claims

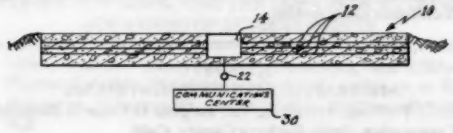


A flush mounted backfire antenna and array receptive to circularly polarized radiation and particularly adapted for aircraft application. Two orthogonally phased elements such as half-wave slots are arranged so that the projected angle of the E field of the elements is 90° in a backfire direction.

3,775,772
ULTRA HARD COMMUNICATIONS ANTENNA

Terry E. Carrell, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed May 11, 1966, Ser. No. 550,879
Int. Cl. H01q *1/04*
U.S. Cl. 343—719 6 Claims



A ground-to-air antenna capable of withstanding all overpressures outside the crater of a nuclear explosion including a massive reinforced concrete block having one exposed surface flush with the surrounding terrain, copperplating the reinforcing members and placing an insulation-filled wave guide in the

concrete and connecting it to a sending and receiving means, while the impedance of the wave guide is matched to that of free space.

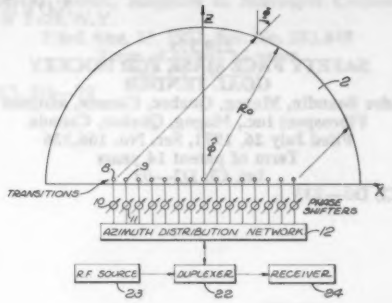
3,775,773

TECHNIQUE FOR GENERATING PLANAR BEAMS FROM A LINEAR DOPPLER LINE SOURCE EMPLOYING A CIRCULAR PARALLEL-PLATE WAVEGUIDE

Jeffrey T. Nemit, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,451
Int. Cl. H01q 19/14
U.S. Cl. 343—781 10 Claims

A circular parallel-plate wave guide converter applied to the array of a linear Doppler-scanned antenna or to the array of an electronic-scanned antenna, to convert either of those antenna systems, which normally radiate conical-coordinate beams, to a system which radiates planar-coordinate beams, in the former case coded as to angle of radiation as a function of frequency. In one form, the aperture of the plate system comprises a 180 degree horn formed by flaring the circular perimeters of the plates. In another form, the horn section is folded downward to provide illumination as an offset feed for a 180 degree (in azimuth) reflector surface which is circular and convex in azimuth and also concave outward in any vertical plane.

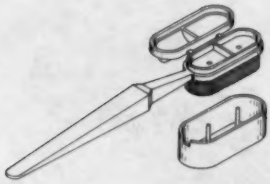


DESIGNS

NOVEMBER 27, 1973

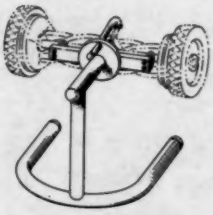
229,375
SAFETY FACE MASK FOR HOCKEY GOAL TENDER
Andre Beaudin, Magog, Quebec, Canada, assignor to Fibrosport Inc., Magog, Quebec, Canada
Filed July 26, 1971, Ser. No. 166,336
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

229,376
COMBINATION TOOTHBRUSH, CLOSURE CAP AND DENTIFRICE CONTAINER
Arthur A. Gleichert, Mountain Brook, Ala., assignor of a fractional part interest to Lela P. Gleichert
Filed Jan. 4, 1972, Ser. No. 215,447
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18

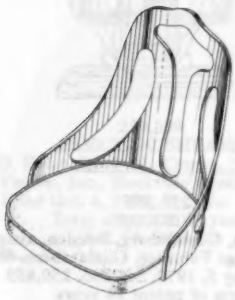


229,377
STAND
Jimmy J. Johnson, 6800 Kit Carson, Wichita Falls, Tex. 76310
Filed May 24, 1972, Ser. No. 256,635
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—29

229,378
DISPLAY STAND
Ronald M. Johnson, Minneapolis, Minn., assignor to The Toro Company, South Minneapolis, Minn.
Filed Jan. 17, 1972, Ser. No. 218,647
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—28

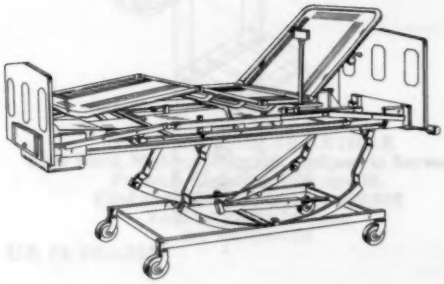


229,379
CHAIR
Ted Cretin, Fort Mitchell, Ky., assignor to National Service Industries, Inc., Atlanta, Ga.
Filed Mar. 7, 1972, Ser. No. 232,651
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



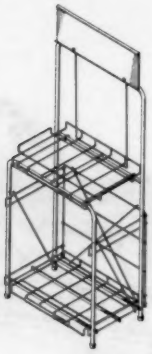
229,380
BED
Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, Conn., assignors to Interroyal Corporation, New York, N.Y.
Filed Aug. 23, 1972, Ser. No. 283,047
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79

229,381
BED
Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, Conn., assignors to Interroyal Corporation, New York, N.Y.
Filed Aug. 23, 1972, Ser. No. 283,048
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79

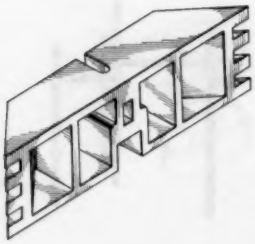


229,382
DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,281
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—176

229,383
DISPLAY RACK
Clark B. Rollins, Jr., % Nashville Display Co., 1415 Elm Hill Pike, Nashville, Tenn. 37210
Filed Mar. 9, 1972, Ser. No. 233,396
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

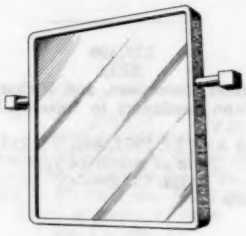


229,384
CORNER BRACE FOR FURNITURE
G. Jack Groce, Gainesville, and John D. Magee, Douglass, Tex., assignors to Groce Manufacturing Company, Inc., Gainesville, Tex.
Filed Aug. 20, 1971, Ser. No. 173,714
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

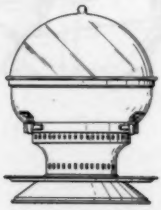


229,385
PICTURE FRAME OR THE LIKE
Hugh N. Pace, 3516 Poole Road, Raleigh, N.C. 27610
Filed Jan. 11, 1971, Ser. No. 105,766
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—238

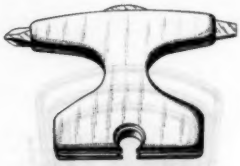
229,386
MIRROR
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed May 5, 1972, Ser. No. 250,859
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242



229,387
COVERED PUNCH BOWL OR THE LIKE
Alvin Gruber, 2215 Disston St., Philadelphia, Pa. 19149
Filed Dec. 13, 1971, Ser. No. 207,731
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—61



229,388
WRENCH
Samuel J. Brunette, Middle Island, N.Y. (Crooked Oak Road, Belle Terre, Port Jefferson, N.Y. 11777)
Filed Jan. 31, 1972, Ser. No. 222,448
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21

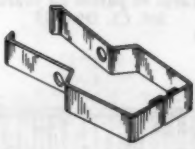


229,389
ELECTRIC SHEARS
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Oct. 4, 1971, Ser. No. 186,594
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—61

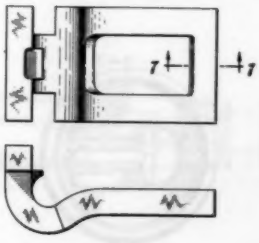
229,390
MINIATURE SCREW DRIVER
Harris S. Hart, 3009 McFaddin, Beaumont, Tex. 77702
Filed July 15, 1971, Ser. No. 163,138
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—85

229,391
CUTTING TOOL FOR PLASTIC AND THE LIKE
Tony L. Nelms, St. Louis, Mo., assignor to K-S-H, Inc.
Filed July 13, 1971, Ser. No. 162,326
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98

229,392
CLAMP OR SIMILAR ARTICLE
Emil Faust, Highland Park, Ill., assignor to Burwood Products Company, Chicago, Ill.
Filed Oct. 15, 1971, Ser. No. 189,805
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233



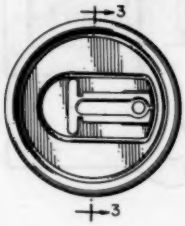
229,393
CHAIN LINK
Edward A. Graetz, Pound, Wis., assignor to John Plewka, Pound, Wis.
Filed Nov. 27, 1970, Ser. No. 26,184
Term of patent 14 years
The portion of the term of the patent subsequent to Mar. 30, 1985, has been disclaimed
Int. Cl. D8—*08*
U.S. Cl. D8—261



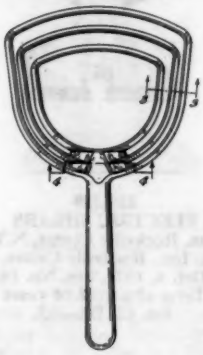
229,394
COMBINED BOTTLE AND DISPLAY CASE THEREFOR
Hubert de Givenchy, Paris, France, assignor to Parfums Givenchy, Levallois-Perret, France
Filed Feb. 19, 1971, Ser. No. 117,225
Claims priority, application France Oct. 1, 1970
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—12

229,395
PACKAGING CONTAINER FOR LIQUIDS
Henry M. Chang, Bronx, N.Y., assignor to First Dynamics, Inc., New York, N.Y.
Filed Feb. 4, 1972, Ser. No. 223,799
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

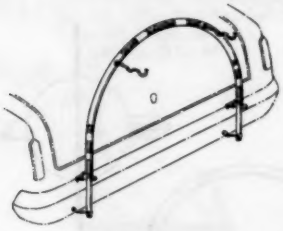
229,396
END CLOSURE FOR A CONTAINER
Arthur P. Zundel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed June 14, 1972, Ser. No. 262,794
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—255



229,397
BUTCHERS' BONE DUST SCRAPER
Charles J. Hunt, Morning View, Ky., assignor to Vulcan Corporation, Cincinnati, Ohio
Filed Sept. 22, 1971, Ser. No. 182,926
Term of patent 14 years
Int. Cl. D7—04
U.S. Cl. D11—1 R

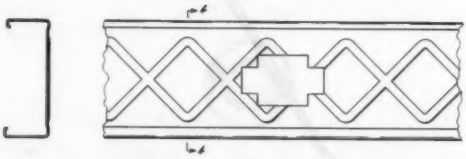


229,398
BICYCLE CARRIER FOR AUTOMOBILES
Shigeto S. Shiwota, 2686 Cordelia Road, Los Angeles, Calif. 90049
Filed Nov. 12, 1971, Ser. No. 198,492
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—158

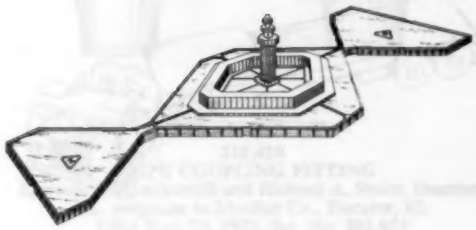


229,399
TIRE
James J. Martell, Akron, and James A. Stevens, Mogadore, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 21, 1972, Ser. No. 282,212
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—145

229,400
METAL WALL STUD
Percy N. Ashley, Leeds, Ala., assignor to Vulcan Metal Products, Inc.
Filed Nov. 12, 1971, Ser. No. 198,505
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 H

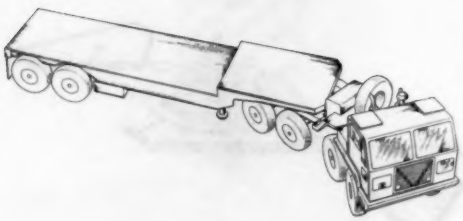


229,401
AIRPORT
John W. Magill, 664 N. Michigan Ave., Chicago, Ill. 60611
Filed June 14, 1972, Ser. No. 262,757
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R

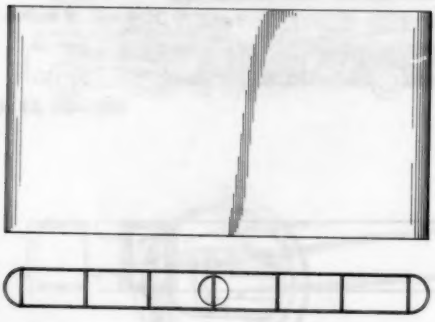


229,402
TRAILER
Richard D. Edler, 1255 Valley Road, Bannockburn, Ill.
Filed Sept. 29, 1971, Ser. No. 184,976
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3 E

229,403
ARTICULATED TRUCK WITH TRAILER
Henry A. Ford, San Jose, and Robert H. David, Los Altos, Calif., assignors to Lockheed Missiles & Space Company Inc., Sunnyvale, Calif.
Filed Sept. 18, 1972, Ser. No. 290,106
Term of patent 14 years
Int. Cl. D12—*09, 10*
U.S. Cl. D14—3 J



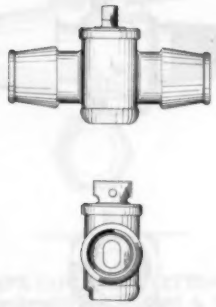
229,404
FREEZE DRYING MODULE
David Theodore Sutherland, New Paltz, N.Y., assignor to Cenco Medical/Health Supply Corporation, Chicago, Ill.
Filed Nov. 17, 1971, Ser. No. 199,833
Term of patent 14 years
Int. Cl. D24—*01;* D6—*04*
U.S. Cl. D16—2 C



229,405
GYPSY MOTH TRAP
Morris William Kuchenbecker, Neenah, and Russell John Cook, Appleton, Wis., assignors to American Can Company, Greenwich, Conn.
Filed July 19, 1972, Ser. No. 273,276
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—19

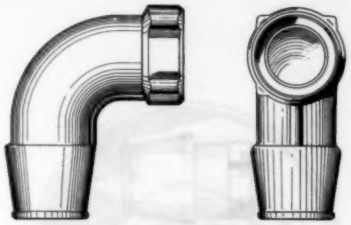
229,406
FISH LURE SAVING DEVICE
Elmer L. Freeman, P.O. Box 213, Shawnee, Okla. 74801
Filed Aug. 28, 1972, Ser. No. 283,907
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31

229,407
VALVE
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,614
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

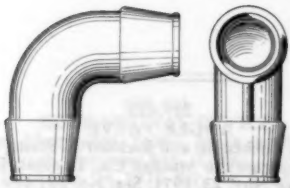


229,408
PIPE COUPLING FITTING
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,613
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

229,409
PIPE COUPLING FITTING
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,616
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

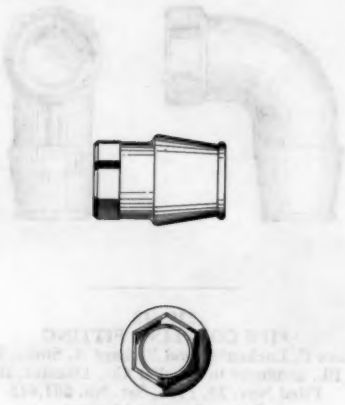


229,410
PIPE COUPLING FITTING
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,615
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

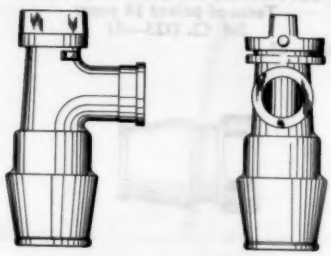


229,411
PIPE COUPLING FITTING
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,617
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

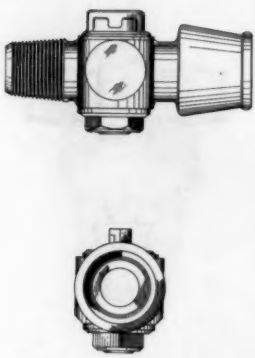
229,412
PIPE COUPLING FITTING
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,618
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



229,413
ANGLE VALVE
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,619
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



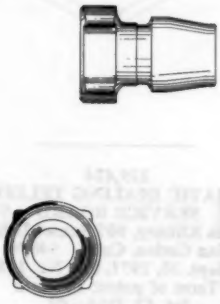
229,414
VALVE
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,620
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



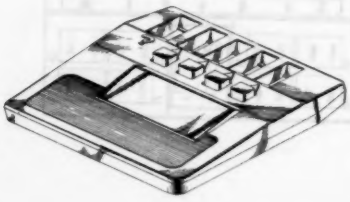
229,415
PIPE COUPLING FITTING
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,626
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

229,416
PIPE COUPLING FITTING
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,627
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

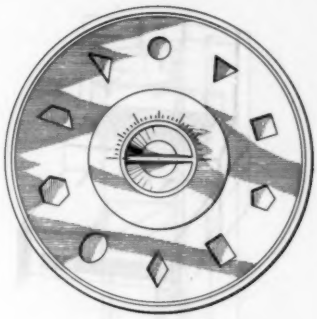
229,417
PIPE COUPLING FITTING
Lawrence F. Luckenbill and Richard A. Stultz, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 23, 1971, Ser. No. 201,628
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



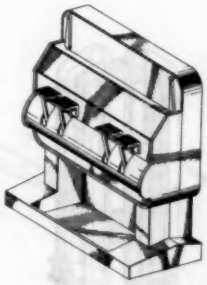
229,418
EDUCATIONAL DEVICE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan
Filed Mar. 24, 1972, Ser. No. 238,020
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R



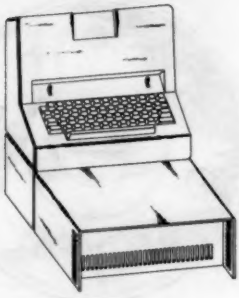
229,419
EDUCATIONAL DEVICE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan
Filed Mar. 24, 1972, Ser. No. 238,022
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R



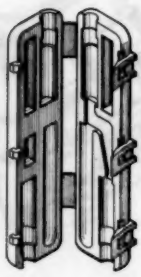
229,420
EDUCATIONAL DEVICE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan
Filed Mar. 24, 1972, Ser. No. 238,023
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R



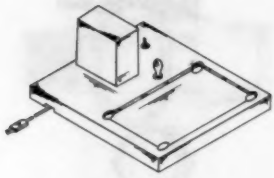
229,421
DATA COMMUNICATIONS TERMINAL
Walter W. Wiebe, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 26, 1972, Ser. No. 257,492
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

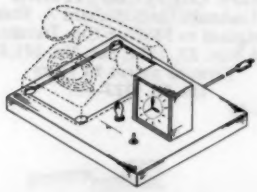


229,422
CIRCUIT BREAKER HOUSING
Perry E. Allen, 4644 Round Hill Road, Birmingham, Mich. 48008
Filed Oct. 20, 1971, Ser. No. 191,147
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

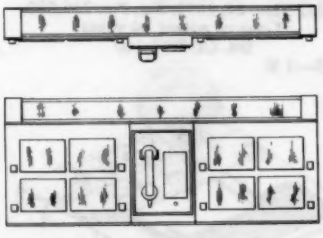


229,423
TELEPHONE TIMER STAND
Hugh O. Pessner, 90 Corte De Sabla, Greenbrae, Calif. 94904
Filed Sept. 3, 1971, Ser. No. 177,926
Term of patent 14 years
Int. Cl. D10—*03*; D14—*03*
U.S. Cl. D26—14 A





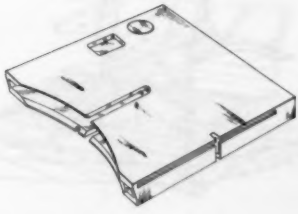
229,424
AUTOMATIC DIALING TELEPHONE SERVICE BOARD
James Kilburg, 907 Sunset Drive, San Carlos, Calif. 94070
Filed Sept. 30, 1971, Ser. No. 185,469
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



229,425
STEREO HEADSET
John P. McCabe, Miller Place, N.Y., assignor to Instrument Systems Corporation, Jericho, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,846
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 H

229,426
COIN TELEPHONE
George M. Janda, Westchester, and Gerald J. Tomany, Berwyn, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Mar. 17, 1972, Ser. No. 235,888
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

229,427
MAGNETIC DISK CARTRIDGE JACKET
Ronald E. Hunt, Austin, and William M. Jenkins, Leander, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 1, 1972, Ser. No. 258,913
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

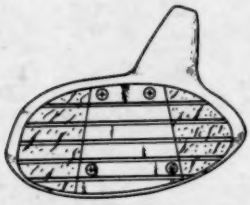


229,428
FIGURINE
Jimmy J. Johnson, 6800 Kit Carson, Wichita Falls, Tex. 76310
Filed May 24, 1972, Ser. No. 256,636
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 E

229,429
FIGURINE
Jimmy J. Johnson, 6800 Kit Carson, Wichita Falls, Tex. 76310
Filed May 24, 1972, Ser. No. 256,639
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 B

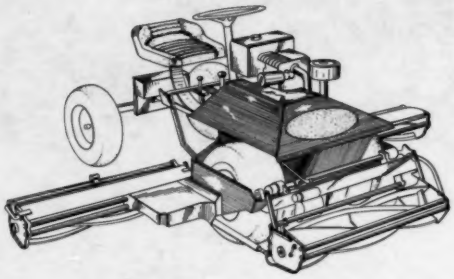
229,430
COMBINED BASKETBALL GOAL WITH SUPPORT AND GROUND ENGAGING UNIT
Joseph L. Fortin, 1132 W. 3rd Ave., Columbus, Ohio 43212
Filed July 13, 1971, Ser. No. 162,320
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 VV

229,431
GOLF CLUB HEAD
George F. Baker, Rte. 5, Box 545, Concord, Tenn. 37720
Filed Sept. 29, 1971, Ser. No. 184,973
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

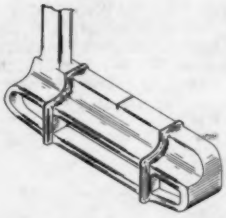


229,432
BLOCKING SLED
Orley David Rogers, P.O. Box 269, W. Ludington Drive, Farwell, Mich. 48622
Filed Oct. 15, 1971, Ser. No. 189,804
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

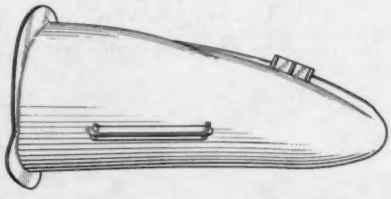
229,433
LAWNMOWER
John R. Lian, Stratford, and Simo A. O. Pennila, Milford, Conn., assignors to Stellar Industries, Inc., Bridgeport, Conn.
Filed Dec. 29, 1971, Ser. No. 213,785
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 D



229,434
GOLF PUTTER HEAD
George C. Brower, 2308 Pacific Ave., Long Beach, Calif. 90806
Filed Feb. 7, 1972, Ser. No. 225,017
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GN

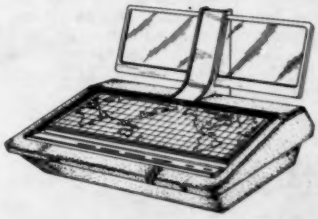


229,435
BAG CHUTE FOR MOWERS AND THE LIKE
Richard A. Thorud, Minneapolis, Minn., assignor to Toro Manufacturing Company, Minneapolis, Minn.
Filed Jan. 14, 1971, Ser. No. 106,621
Term of patent 14 years
Int. Cl. D15—*03, 99*
U.S. Cl. D40—1 A

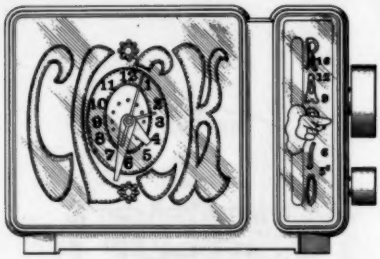


229,436
ELECTRONIC TIMEPIECE FACE
Ken Tang Chow, 430 Minoca Road, Portola Valley, Calif. 94025
Filed Feb. 16, 1971, Ser. No. 115,931
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D42—1 B

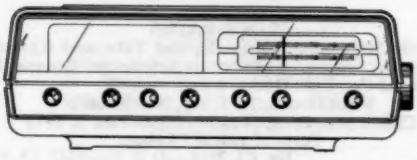
229,437
CLOCK-RADIO
Masaaki Miyamoto, Moriguchi, and Takeyoshi Kawano, Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 2, 1971, Ser. No. 204,401
Claims priority, application Japan June 3, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



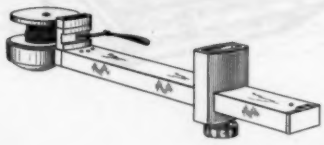
229,438
CLOCK-RADIO
Joan M. Klatil, Syracuse, N.Y., assignor to General Electric Company
Filed Jan. 17, 1972, Ser. No. 218,661
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



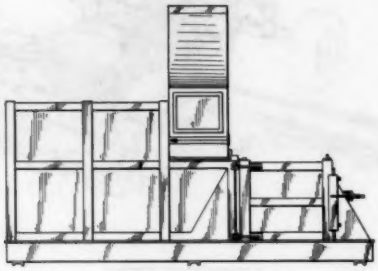
229,439
CLOCK-RADIO
John T. Houlihan, Manlius, N.Y., assignor to General Electric Company
Filed Apr. 13, 1972, Ser. No. 243,928
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



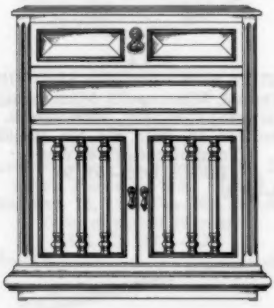
229,440
MASON'S ALIGNING GUIDE
Michel Quenot, Besancon, France, assignor to Stanley Mabo, Besancon, France
Filed July 7, 1972, Ser. No. 269,789
Claims priority, application France Jan. 10, 1972
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6 R



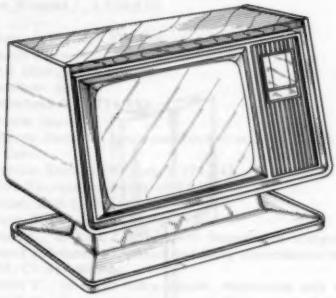
229,441
HORIZONTAL REFUSE BALER
Jay R. Guhl, San Leandro, Calif., assignor of a fractional part interest to W. Dean Park
Filed Dec. 27, 1971, Ser. No. 212,857
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 B



229,442
PHONOGRAPH CONSOLE
James E. Mohn, Syracuse, N.Y., assignor to General Electric Company
Filed Sept. 27, 1971, Ser. No. 184,327
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



229,443
TELEVISION RECEIVER CABINET
Melvin H. Boldt, Glenview, and David P. Chuboff, North Barrington, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 1, 1971, Ser. No. 203,930
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

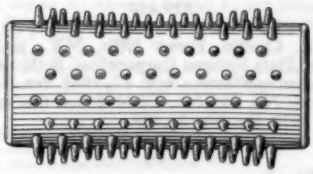


229,444
BINOCULARS
Wolfgang Windisch, Braunfels, Germany, assignor to Carl Zeiss-Stiftung, Oberkochen/Wuerttenberg, Germany
Filed Jan. 24, 1973, Ser. No. 326,417
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E

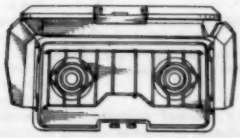
229,445
BINOCULARS
Joachim Hornschu, Oberkochen, and Artur Jung, Heidenheim, Germany, assignors to Carl Zeiss-Stiftung, Oberkochen/Wuerttenberg, Germany
Filed Jan. 24, 1973, Ser. No. 326,448
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E

229,446
DISPOSABLE FIBER TIP MARKER
William R. Dahl, Lakewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 14, 1971, Ser. No. 180,537
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

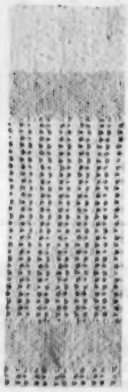
229,447
HAIR-CURLER
Erik K. Jensen, Kalundborg, Denmark, assignor to Bristol-Myers Company, New York, N.Y.
Filed Sept. 8, 1970, Ser. No. 24,861
Claims priority, application Denmark Mar. 12, 1970
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



229,448
GAS STOVE
André Traclet, Chaponost, France, assignor to Application des Gaz, Paris, France
Filed Feb. 16, 1971, Ser. No. 115,912
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



229,449
WOVEN MESH FABRIC
Gunter H. Stern, St. Louis, Mo., assignor to Continental Textile Corporation of America, St. Louis, Mo.
Filed Sept. 16, 1970, Ser. No. 25,025
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 Y



229,450
FLUID DISPENSING APPARATUS
Michael E. Croslin, Forest Hills, N.Y., assignor to Grumman Data Systems Corporation, Bethpage, N.Y.
Original design application Sept. 17, 1969, Ser. No. 19,187, now Patent No. 219,418. Divided and this application Feb. 18, 1970, Ser. No. 21,499
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3

229,451
COMBINATION DISPLAY AND COUPON DISPENSING SIGN
Francis H. Cregar, 7 Vista del Golfo, Long Beach, Calif. 90803
Filed Mar. 5, 1971, Ser. No. 121,609
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12

229,452
ADVERTISING NOVELTY
Fred R. Bentley, Alma, Mich., assignor to Leonard Refineries, Inc.
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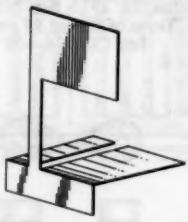

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Bagen, John F.; Gudelis, David A.; and Perry, Stephen F., to Esso Research and Engineering Company. Combination of dilution chilling with scraped surface chilling in dewaxing lubricating oils. 3,775,288, Cl. 208-33.000.
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Baker, James N.; Bird, Richard A.; and Bush, Glenn W., to National Steel Corporation. Process for preparing chromized ferrous metal sheet material and the resultant articles. 3,775,151, Cl. 117-33.000.
Baker, John G.; and Yerty, Oliver M., to PPG Industries, Inc. Stabilized unsaturated polyesters with 2,4-dimiorophenol as stabilizer. 3,775,513, Cl. 260-864.000.
Baker, John O.: *See—*
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Baker, Joseph R., to Diagnostic Instruments, Inc. Programmable power supply controlled by changes in load current. 3,775,669, Cl. 323-4.000.
Baker, William H. Box beam structures and connections for beam-supported structures. 3,774,366, Cl. 52-664.000.
Bakker, Donavon L. Conveyor with selective intermediate dropout. 3,774,751, Cl. 198-169.000.
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Balamuth, Lewis; Koris, Arthur; and Farina, Anthony P., to Ultrasonic Systems, Inc. Ultrasonic instructional kit, method and apparatus. 3,774,317, Cl. 35-19.00r.
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Banko, Ronald C.; and Olsony, Thor F., to Philco-Ford Corporation. Cabine structure. 3,774,984, Cl. 312-8.000.

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Barie, Walter P., Jr., to Gulf Research & Development Company. Polymer and method of making. 3,775,384, Cl. 260-76.40d.

Barlow, Gordon A.; Kramer, Norman; Brand, Derek Albert; and Imat, Alexander, to Glass, Marvin, & Associates. System for operating miniature vehicles. 3,774,340, Cl. 46-244.00a.

Barlow, Richard A. Parallel attachable, two story expandable, trailable building structures. 3,774,956, Cl. 296-23.00g.

Barnard, Douglas: *See—*
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Barnett, Ronald R.; and Drach, Deorge, Jr., to General Motors Corporation. Occupant restraint system. 3,774,936, Cl. 280-150.0ab.

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Barter, James A., to PPG Industries, Inc. Liquid dialkyl peroxydicarbonate composition. 3,775,341, Cl. 252-426.000.

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Barton, Robert M., to CMI Corporation. Road texturing machine. 3,775,018, Cl. 404-93.000.

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Basak, Nitya Goral: *See—*
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Basaraba, Peter, 10% to Lee, Raymond, Organization, Inc., The. Compact camper. 3,774,957, Cl. 296-23.0mc.

Basek, Charles, to Raleigh Industries of Canada Limited - Les Industries Raleigh du Canada Limitee. Sproket-actuated bicycle brake. 3,774,732, Cl. 188-24.000.

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Batka, Heimold; and Altenschopfer, Theodor, to Henkel & Cie G.m.b.H. Process and agents for the clear-rinse in mechanical dishwashing. 3,775,330, Cl. 252-89.000.

Batley, William R., Jr. Fractionation of alfalfa wetted with molasses serum. 3,775,133, Cl. 426-378.000.

Battelle Development Corporation, The: *See—*
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Bayer, Karl-Heinz; Waldmann, Hermann; and Weibelzahl, Manfred, to Siemens Aktiengesellschaft. Method and apparatus for the operation of an automatically controlled synchronous machine. 3,775,649, Cl. 318-188.000.

Bayly, Peter Kingsley, to Wiltshire Cutlery Company Proprietary Limited. Knife scabbard or holder. 3,774,350, Cl. 51-204.000.

Bazell, Seymour; Ostensen, Ralph G.; and Goldberg, Edward M., to Medical Products Corporation. Fiber-optic light console. 3,775,606, Cl. 240-47.000.

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Beck, James C.; and Nielsen, Harrie W., to Singer Company, The. Visual simulation optical system. 3,774,990, Cl. 350-181.000.

Beck, Robert Haun, to Du Pont de Nemours, E. I., and Company. Photographic developing apparatus. 3,774,521, Cl. 95-89.00r.

Beckers, Hans. Treating of discrete containers. 3,775,229, Cl. 161-47.000.

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Harnden, Michael Raymond, 3,775,399.

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Beitzel, Stuart W.; and Edwards, Robert F., to Water Treatment Corporation. Method and apparatus for mixing gases with water. 3,775,314, Cl. 210-63.000.

Bell Canada-Northern Electric Research, Limited: *See—*
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Bemis, Stuart A. Photomechanical method of producing grounded printed circuits. 3,775,118, Cl. 96-36.200.

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Bendix Corporation, The: *See—*
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Benfield, Donald C. Hook-shaped throwing members and horizontal receiving support rod. 3,774,911, Cl. 273-95.00r.

Benner, Robert I.; and Mortimer, William P., to Sun Oil Company of Pennsylvania. Hydrocracking process to produce gasoline and naphthenic lubricating oils concurrently. 3,775,297, Cl. 208-111.000.

Bennett, Blair O.: *See—*
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Bennett, John E.; and O'Leary, Kevin J. Non-passivating barrier layer electrodes. 3,775,284, Cl. 204-290.00f.

Bentley, Daniel L., to General Motors Corporation. Exhaust system clamp assembly. 3,774,270, Cl. 24-276.000.

Bentley-Leek, Herbert, to Saunders Valve Company Limited. Method of manufacturing valve seating rings. 3,774,277, Cl. 29-157.10r.

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Berg, Markus; Fries, Walter; Hartenstein, Josef; and Werner, Claus, to Henkel & Cie G.m.b.H. Softening finishes for washed laundry. 3,775,316, Cl. 252-8.800.

Berger, Emil J., Jr., to Turbo Machine Company. Method for producing synthetic torque yarns. 3,774,388, Cl. 57-157.0ts.

Berger, Heinz; and Berger, Heinz-Werner. Apparatus for detoxifying exhaust emissions of and internal-combustion engine. 3,775,064, Cl. 23-288.00f.

Berger, Heinz-Werner: *See—*
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Berger, Julius; Pruess, David; and Scannell, James Parnell, to Hoffmann-La Roche Inc. L-Trans-2-amino-4-(2-aminoethoxy)-3-butenoic acid. 3,775,255, Cl. 195-80.000.

Berger, Richard M.; and Brooks, Elwin W., to American Filtrona Corporation. Apparatus for making filter means. 3,774,508, Cl. 93-1.00c.

Beristain, Charles D.; Nixon, Barrie K.; and Kiefer, Robert J., to Westinghouse Electric Corporation. Sludge dewatering apparatus and process. 3,774,760, Cl. 210-66.000.

Berkestad, Karl E., to AB Bygg-Och Transportekonomi (BT). Lift trucks having a three-stage lift mast. 3,774,727, Cl. 187-9.000.

Berkley & Company, Inc.: *See—*
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Bernardin, Rodney A.: *See—*
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Berth, Peter: *See—*
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Bestenreiner, Friedrich; and Deml, Reinhold, to Agfa-Gevaert Aktiengesellschaft. Method for the production of lenticular elements. 3,775,110, Cl. 96-27.00r.

Bhan, Sharma Chandra: *See—*
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Bharucha, Nanbhai Rustomji; and Janjua, Mohammad Barakat Ilahi, to Canada Wire and Cable Company Limited. Plating copper on aluminum. 3,775,264, Cl. 204-28.000.

Bharucha, Nanbhai Rustomji; and Janjua, Mohammad Barakat Ilahi, to Canada Wire and Cable Company Limited. Method of plating copper on aluminum. 3,775,265, Cl. 204-33.000.

Bhatia, Vijay H.; and Clendenen, Harold K., to TRW Inc. Angle drive. 3,774,466, Cl. 74-417.000.

Biebuyck, Lawrence F.: *See—*
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Bilstein, August, Firma: *See—*
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Bird, Richard A.: *See—*
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Bjorklund, Anders: *See—*
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Bjorkman, Harry K., to Occidental Energy Development Company. Production of aqueous zinc chloride electrolyte saturated with chlorine. 3,775,187, Cl. .

Bjorksten, Johan: *See—*
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Bjorksten Research Laboratories, Inc.: *See—*
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Paquette, Elmer Gordon; and Guenther, Karl Russell, 3,775,210.

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Blake, Michael Orren; and Larson, Paul Z., to Du Pont de Nemours, E. I., and Company. Continuous process and apparatus for laminating an oriented thermoplastic film to wet cellulose. 3,775,217, Cl. 156-308.000.

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Blodee, Leif. Stacking chair. 3,774,960, Cl. 297-239.000.

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Bock, Rudolf. Arrangement for bending of bars of reinforcing steel mats. 3,774,434, Cl. 72-306.000.

Bockstahler, Earl R., to Dow Chemical Company, The. Substituted phenylthioamidines. 3,775,478, Cl. 260-564.00r.

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Boivin, Louis Philippe, to Bell Canada-Northern Electric Research, Limited. Coupling of lasers to optical fibres. 3,774,987, Cl. 350-96.0wg.

Boley, Eugene C. Apparatus for detarnishing silver. 3,775,279, Cl. 204-242.000.

Bollyky, Laszlo Joseph, to American Cyanamid Company. High intensity chemiluminescent system with weakly basic salt-type catalyst. 3,775,336, Cl. 252-188.3cl.

Bom, Cornelis Johannes Gerardus: *See—*
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Bondon, Lewis A.; and Haselman, Bruce B. Oceanographic vehicle and platform. 3,774,564, Cl. 114-16.00r.

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Bonney, Roland W. Rotary spool valve. 3,774,634, Cl. 137-596.000.

Booth, Edwin F. Ground marking machine. 3,774,690, Cl. 172-126.000.

Boris, Michel, to Societe Technique de Pulverisation. Atomisers for perfume and other liquids. 3,774,849, Cl. 239-33.00g.

Bormans, Jozef Marie Jacobus: *See—*
Visser, Reier; Bormans, Jozef Marie Jacobus; Van Haaren, Wilhelmus Petrus Josephus; and Homan, Douwe Meindert, 3,775,140.

Bornfleth, Ulrich, to Hauni-Werke Korber & Co., KG. Apparatus for producing, processing and manipulating filter rod sections. 3,774,791, Cl. 214-302.000.

Borostyan, Stephen, to Xerox Corporation. Vacuum sheet stripping apparatus. 3,774,907, Cl. 271-80.000.

Borovsky, Igor Borisovich; Kozlenkov, Alexandr Ivanovich; and Bogdanov, Vladimir Grigorievich. Apparatus for special analysis of specimens containing light-weight elements. 3,775,611, Cl. 250-310.000.

Borraccio, Robert. Snow skiing training aid. 3,774,572, Cl. 116-67.00r.

Borrello, Giuseppe, to Colgate-Palmolive Company. Manufacture of enzyme spheres. 3,775,331, Cl. 252-89.000.

Borst, Adolf H. Gripping locomotive for suspended railway. 3,774,548, Cl. 105-30.000.

Borst, Gaylord M.; and Shimanckas, William J., to Outboard Marine Corporation. Rotary cable steering system. 3,774,568, Cl. 114-144.00r.

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Merke, Ernst; Gorg, Otto; and Grupp, Joachim, 3,775,731.

Bosch, Werner; and Sticker, Gerd, to Siemens Aktiengesellschaft. Magnetic system for relays. 3,775,715, Cl. 335-230.000.

Bossert, Friedrich; and Vater, Wulf, to Farbenfabriken Bayer Aktiengesellschaft. Unsymmetrical 1,4-dihydro-4-aryl-nicotinate esters. 3,775,422, Cl. 260-294.900.

Bosshard, Rene; Muller, Jean-Claude; and Ebert, Edith, to Ciba-Geigy Corporation. 2-Amino-4-phenyl-thiazoles and their addition salts. 3,775,425, Cl. 260-306.80r.

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Bouchard, Robert Joseph, to Du Pont de Nemours, E. I., and Company. Compositions for making resistors comprising lead-containing polynary oxide. 3,775,347, Cl. 252-518.000.

Boudreau, Paul E.; Chien, Robert T.; and Peck, Charles C., to International Business Machines Corporation. Method and apparatus for detecting odd numbers of errors and burst errors of less than a predetermined length in scrambled digital sequences. 3,775,76, Cl. 340-146.1al.

Bourgoin, Jacques; Budin, Jean-Pierre; and Lenfant, Rene, to Compagnie Generale d'Electricite. Recording superimposed holograms. 3,774,986, Cl. 350-3.500.

Bourne, Henry Arthur. Curtain track system. 3,774,665, Cl. 160-343.000.

Bousaid, Issam S.; Fontaine, Marc F.; and Korstad, Ralph J., to Texaco Inc. Method for initiating in-situ combustion. 3,774,682, Cl. 166-260.000.

Bowen, Jack L., to Johnson, E. F., Company. Variable impedance. 3,775,647, Cl. 317-249.00r.

Bowler, Peter; and Nir, Benjamin, to Scragg, Ernest, & Sons Limited. Speed controls for electric motors. 3,775,652, Cl. 318-227.000.

Bowman, Robert L.: *See—*
Ito, Yoichiro; and Bowman, Robert L., 3,775,309.

Boyars, Carl; and Zovko, Carl T., to United States of America, Navy. Nitrogen generator. 3,775,199, Cl. 149-35.000.

Boyce, Walter A.: *See—*
Hasell, Richard F.; Boyce, Walter A.; and Smith, Chrisman O., 3,775,634.

Boyd, Robert A. Elastic band projectile projecting device. 3,774,585, Cl. 124-21.000.

Bozanic, Donald A.; Mergerian, Dickron; Minarik, Ronald W.; and Pincoffs, Peter H., to Westinghouse Electric Corporation. High bandwidth-time product spin echo system. 3,775,670, Cl. 324-.50r.

BP Chemicals Limited: *See—*
Yeomans, Bertram, 3,775,449.

Bradley, Gordon Frank, to Ciba-Geigy AG. Pigment compositions. 3,775,148, Cl. 106-288.00q.

Bradley, William J. Tiltable headboard. 3,774,247, Cl. 5-53.00b.

Brady, Thomas Joseph, to RCA Corporation. Cathode ray display intensity control circuit. 3,775,637, Cl. 315-22.000.

Braillon, Philibert Maurice Albert. Permanent-magnet holder for ferromagnetic workpieces. 3,775,717, Cl. 335-295.000.

Brand, Derek Albert: *See—*
Barlow, Gordon A.; Kramer, Norman; Brand, Derek Albert; and Imat, Alexander, 3,774,340.

Brandt, William P.; and Huffman, James D., to Den-Tal-Ez Mfg. Co. Dental chair with a switch actuating arm rest. 3,774,965, Cl. 297-417.000.

Brassat, Bert, to Bayer Aktiengesellschaft. Process for the production of pigmented polyamides. 3,775,362, Cl. 260-37.00n.

Brasseur, Gill, to Bombardier Limited. Sprocket wheel for snowmobile or the like. 3,774,465, Cl. 74-234.00r.

Bratton, Francis H. Selection control methods for explosive systems. 3,774,541, Cl. 102-27.00r.

Bratton, Francis H. Containers for extrudable materials. 3,774,809, Cl. 222-137.000.

Bratton, Francis H. Extrusion packages for viscous materials. 3,774,816, Cl. 222-391.000.

Bratton, Francis H. Caulking guns with the handle positioned adjacent the dispensing outlet. 3,774,819, Cl. 222-391.000.

Braun, Erich, to Porsche K.G. Safety installation for two-circuit brake systems, especially of motor vehicles. 3,774,974, Cl. 303-6.00r.

Braun, Josef; and Seifert, Eberhard, to Sulzer Brothers Limited. Terry cloth take-up motion for weaving machine. 3,774,651, Cl. 139-291.00r.

Braunstein, David M., to Celanese Corporation. Oxymethylene polymer compositions containing acicular calcium metasilicate. 3,775,363, Cl. 260-37.0al.

Brecker, Lawrence, to Argus Chemical Corporation. Organotin thiocarboxylates and preparation thereof. 3,775,451, Cl. 260-429.700.

Bredberg, Stig G. D., to AB Bygg-Och Transportekonomi (BT). Safety system for a lift truck. 3,774,726, Cl. 187-9.000.

Breiling, Edward H.: *See—*
Archer, Fred Curtis; DeDiemar, Ronald B.; and Breiling, Edward H., 3,774,858.

Brent, Burton David. Magnetic medical tool holder stand. 3,774,773, Cl. 211-60.00t.

Breslow, Jeffrey D.: *See—*
Glass, Marvin I.; and Breslow, Jeffrey D., 3,774,912.

Brichard, Claude, to Glaverbel S.A. Method and apparatus for controlling gas flows along a drawn ribbon of glass. 3,775,080, Cl. 65-95.000.

Bridge Painting, Inc.: *See—*
Lindsay, Lewis Lee, Jr., 3,774,719.

Bridwell, John W.; and Lohbauer, Kenneth R., to Caterpillar Tractor Company. Hydraulically powered drive and steering system for track type vehicle. 3,774,707, Cl. 180-6.480.

Bright, James A., to General Motors Corporation. Viscous fluid timer for tray ice maker. 3,774,407, Cl. 62-157.000.

Brining, Douglas E., to Feedmatic-Detroit, Inc. Feeding apparatus. 3,774,351, Cl. 51-215.00h.

Bristol-Myers Company: *See—*
Monkovic, Ivo; and Conway, Terry Thomas, 3,775,414.

British Insulated Callender's Cables Limited: *See—*
Campbell, Harold, 3,774,269.

British Nuclear Design & Construction Limited: *See—*
Charcharos, Anthreas Nicholas, 3,775,248.

British Steel Corporation: *See—*
Costelloe, Patrick, 3,775,193.

British Wedge Wire Company Limited: *See—*
Sparham, Vaughan; and Pinner, Gordon Frederick, 3,774,770.

Brock, Herbert E. Aquarium filter assembly. 3,774,766, Cl. 210-169.000.

Broman, Victor E.: *See—*
Turnquest, Byron W.; Chao, Tay S.; and Broman, Victor E., 3,775,321.

Bronkhorst, Armand Francois; Heinrich, Wilhelm Ludwig; and Wurdemann, Ernst, to Holvrieka International N.V. Apparatus for draining and densifying curd. 3,774,304, Cl. 99-460.000.

Brooks, Elwin W.: *See—*
Berger, Richard M.; and Brooks, Elwin W., 3,774,508.

Broomfield Ryerson Research Corporation: *See—*
Ryerson, Joseph L., 3,775,181.

Brosch, Leo; Fechner, Gerd; and Reichert, Eduard, to Transformatoren Union Aktiengesellschaft. Electromagnetic vibrator. 3,775,625, Cl. 310-19.000.

Brotzmann, Karl: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, 3,774,893.
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, 3,774,894.

Brouwer, Charles W.; and Nelson, John, to Leesona Corporation. Bobbin handling system. 3,774,859, Cl. 242-35.50r.

Brown, Cicero C. Rotary drive assembly for handling tubular members. 3,774,697, Cl. 173-20.000.

Brown, Eugene C.; and Carter, Donald L., to Garrett Corporation, The. Brushless motor control. 3,775,648, Cl. 318-138.000.

Brown, Frank R. Cutters. 3,774,301, Cl. 30-186.000.

Brown, Harry W., to Cutler-Hammer, Inc. Rutt-contact speed control trigger switch. 3,775,576, Cl. 200-157.000.

Brown, James D.: *See—*
Uraneck, Carl A.; Trepka, William J.; and Brown, James D., 3,775,369.

Brown, Leanne M.: *See—*
Mazdiyasni, Khodabakhsh S.; Schaper, Barbara J.; and Brown, Leanne M., 3,775,453.

Brown, Robert J. S., to Chevron Research Company. Nuclear magnetism well logging method and apparatus. 3,775,671, Cl. 324-.50r.

Brown, Roger W.; and Ranney, Hinkley H., to Cone-Blanchard Machine Company, mesne. Thread milling attachment. 3,774,501, Cl. 90-11.640.

Brown, Thomas: *See—*
Wilbert, Godfrey; and Brown, Thomas, 3,775,227.

Browning, Edgar Paul; and Madson, Lyle Robert, to Deere & Company. Compact transmission structure. 3,774,460, Cl. 74-15.840.

Bruce, William F., to American Home Products Corporation. 2,6-Dichlorobenzaldehyde hydrazones. 3,775,405, Cl. 260-240.00g.

Bruchon, Paul E.: *See—*
Sherrill, John B.; Bruchon, Paul E.; Phillips, James T.; and Currence, John L., Jr., 3,774,650.

Bruck, George, to Avco Corporation, mesne. Apparatus and method for selectively providing for shifting rotary magnetic heads of tape transport circumferential. 3,775,567, Cl. 179-100.2ca.

Bruderer, Hans; and Ruegg, Rudolf, to Hoffmann-La Roche Inc. Amine compounds. 3,775,479, Cl. 260-566.00a.

Brudy, Peter E., to Aqua Marine Mfg Limited. Convertible top interconnection. 3,774,959, Cl. 296-121.000.

Bruhn, Max R. C., Jr., to Grand Haven Stamped Products Company. Gear shift mechanism. 3,774,469, Cl. 74-476.000.

Brunetti, Heimo. Triazine derivatives as antioxidants. 3,775,411, Cl. 260-248.0cs.

Brusakov, Jury Ivanovich; Livshits, Irma Solomonovna; Kiselev, Vasily Pavlovich; Cheltsov, Vasily Mikhailovich; Avdeev, Mikhail Pavlovich; Marin, Semen Panteleevich; Alivoivodich, Miro Khristoforovich; Kulikov, Alexei Kuzmich; Berezhnoi, Ivan Arkhipovich; olpin, Pavel Ilich; Chernyakhovsky, Leonid Vladimirovich; Eltsova, Zoya Vasilievna; Medvedeva, Lidia Nikolaevna; and Kolomitsky, Fedor Mifodievich. Method of refining aluminium-silicon alloys. 3,775,092, Cl. 75-68.00a.

Brush Wellman Inc.: *See—*
Goodwin, Vernon L., 3,774,290.

Brydon, Donald Lithgow, to Imperial Chemical Industries Limited. Process for making halogenated polyarylene-1,3,4-oxadiazoles. 3,775,382, Cl. 260-78.40r.

Bryson, Millard C.; Mc Kinney, Joel D.; Titmus, Robert A.; and White, Frederick K., to Gulf Research & Development Company. Gasoline prepared from cracking residual oil. 3,775,287, Cl. 208-17.000.

Budin, Jean-Pierre: *See—*
Bourgoin, Jacques; Budin, Jean-Pierre; and Lenfant, Rene, 3,774,986.

Budkevich, Nikolai Pavlovich: *See—*
Nikiforov, Vladimir Pavlovich; Budkevich, Nikolai Pavlovich; Gefter, Semen Emilievich; Evdokimov, Svetozar Vladimirovich; Kil, Ilya Genrikhovich; Ryabov, Valentin Ignatievich; Smorodinov, Alexandr Nikolaevich; Tsybukov, Igo Kirillovich; and Tsyplakov, Anatly Mikhailovich, 3,775,280.

Buehler, Albert H.: *See—*
Kane, James M.; Buehler, Albert H.; and Alix, Earl G., 3,774,765.

Buehler, Fritz A.: *See—*
Vigo, Mario; and Buehler, Fritz A., 3,775,320.

Buetow, Ralph William, to Bjorksten, Johan. Purification of low molecular weight enzymes. 3,775,254, Cl. 195-66.00r.

Buffington, William B. Portable pipe pick-up, conveying and racking device. 3,774,780, Cl. 214-2.500.

Buhler, Arthur; and Mosimann, Walter, to Ciba-Geigy AG. Process for the production of multi-colour effects on natural and synthetic polyamide fibre material. 3,775,045, Cl. 8-15.000.

Bullett, Casper L.: *See—*
Sjoman, Carl F.; Wilson, Clyde R.; Montoya, John L.; and Bullett, Casper L., 3,774,903.

Bullock, Edward K., to Polaroid Corporation. Ink web cassette for rotary printing system. 3,774,538, Cl. 101-336.000.

Bultmann, Friedrich: *See—*
Forster, Hans-Joachim M.; Zaiser, Wolfgang; Hanke, Hans; and Bultmann, Friedrich, 3,774,734.

Bunger, Waldemar. Drape curtain or the like. 3,774,666, Cl. 160-348.000.

Bungo, Edward M.: *See—*
Mamrick, Michael S.; and Bungo, Edward M., 3,775,724.

Burford, Milton K.; Simpson, Robert A.; and Bernardin, Rodney A., to United States of America, Navy. Terradynamic brake. 3,774,540, Cl. 102-2.000.

Burgarella, John P.; Carcia, Peter P.; and Kee, Richard C., to Polaroid Corporation. Photographic control system and apparatus having self-monitoring features. 3,774,516, Cl. 95-42.000.

Burgbacher, Martin, to Papst-Moteren K.G. External-rotor reluctance motor. 3,775,626, Cl. 310-67.000.

Burgess, Dennis A.; Alexson, Charles E.; and Jones, Ralph P., to Microm; a division of Colight Inc. Micro film duplicating device. 3,775,711, Cl. 355-100.000.

Burghart, Anthony V.; Houser, David E.; Kieffer, John E.; and Wallace, George A., to International Business Machines Corporation. Method and apparatus for repairing printed circuits. 3,775,579, Cl. 219-85.000.

Burke, Daniel F.: *See—*
Vondra, Benedict L., Jr.; Haley, Thomas E.; and Burke, Daniel F., 3,775,338.

Burkett, Wilford B.; and Jackson, Robert V., to McCulloch Corporation. Chain saw starting system. 3,774,303, Cl. 30-382.000.

Burlington Industries, Inc.: *See—*
Wedler, Frederick C., 3,775,055.

Burns, Charles D., Co.: *See—*
Schneider, Marshall C., 3,774,332.

Burton, Charles G., to Chisholm-Ryder Company, Inc. Picking arm construction in a machine for harvesting fruit grown on plants arranged in a row. 3,774,381, Cl. 56-330.000.

Bush, Brian, to Adler Outo Precision Ltd. Method and apparatus for mixing liquids. 3,775,058, Cl. 23-230.00r.

Bush, Glenn W.: *See—*
Baker, James N.; Bird, Richard A.; and Bush, Glenn W., 3,775,151.

Butter, Stephen A.: *See—*
Kaeding, Warren W.; and Butter, Stephen A., 3,775,501.

Buttner, F.A., Kommanditgesellschaft Maschinenfabrik: *See—*
Buttner, Hans Hugo, 3,774,527.

Buttner, Hans Hugo, to Buttner, F.A., Kommanditgesellschaft Maschinenfabrik. Machine for tying of packings. 3,774,527, Cl. 100-27.000.

Buttner, Horace J. Recirculating ball heat transfer system for drying and heating materials. 3,775,041, Cl. 432-27.000.

Buzby, George C., Jr.; and Smith, Herchel, to American Home Products Corporation. Synthesis of 13-alkyl-6-chlorogona-4,6-dien-3-ones. 3,775,404, Cl. 260-239.55r.

Byer, Joseph I. Mobile housing unit. 3,774,955, Cl. 296-23.00c.

Cacace, Alfredo Luigi Adolfo; and Cacace, Antonino Giorgio, to Antonsteel (Proprietary) Limited. Processing of scrap metal. 3,774,289, Cl. 29-403.000.

Cacace, Antonino Giorgio: *See—*
Cacace, Alfredo Luigi Adolfo; and Cacace, Antonino Giorgio, 3,774,289.

Cahen, Raymond M.: *See—*
Debus, Henri Robert; Van Tongelen, Marcel; and Cahen, Raymond M., 3,775,495.
Debus, Henri Robert; Van Tongelen, Marcel; and Cahen, Raymond M., 3,775,499.

Calberg, Willis G.: *See—*
Gentile, Ralph; and Calberg, Willis G., 3,775,224.

Calcagno, Benedetto; Ferlazzo, Natale; and Ghirga, Marcello, to Societa' Italiana Resine S.I.R. S.p.A. Method of preparing supported oxidation catalysts for producing ethylene oxide. 3,775,346, Cl. 252-463.000.

Calcott, Thomas George: *See—*
Hamilton, Frank Alexander; and Calcott, Thomas George, 3,774,856.

Caldwell, Charles W.: *See—*
Parker, Bernard I.; and Caldwell, Charles W., 3,775,004.

California Institute of Technology: *See—*
Lewicki, George W.; and Guisinger, John E., 3,775,570.

Camp, Nat. Steam generator with electrically heated boiling chamber. 3,775,589, Cl. 219-284.000.

Campbell, Gabe L.: *See—*
Eklund, Phillip R.; and Campbell, Gabe L., 3,774,280.

Campbell, Harold, to British Insulated Callender's Cables Limited. Electric wire suspension clip. 3,774,269, Cl. 24-250.00r.

Campbell, James R.: *See—*
Igarashi, Yoshiashi; Campbell, James R.; and Allman, Richard L., 3,774,718.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Haines, Ronald L.; Henderson, Ian H.S.; and Sievenpiper, Franklin, 3,775,273.

Canada Wire and Cable Company Limited: *See—*
Bharucha, Nanbhai Rustomji; and Janjua, Mohammad Barakat Ilahi, 3,775,264.
Bharucha, Nanbhai Rustomji; and Janjua, Mohammad Barakat Ilahi, 3,775,265.

Canadian Industries Limited: *See—*
Roach, Robert Joseph, 3,774,496.

Canadian Patents and Development, Limited: *See—*
Capuano, Guido A.; and Davenport, William G., 3,775,260.

Cane, Philip, to Marbelite Company, Inc., The. Traffic controller with binary counter. 3,775,744, Cl. 340-44.000.

Cannon, Maxwell R.: *See—*
Armitage, John D., Jr.; and Cannon, Maxwell R., 3,775,759.

Canoga Controls Corporation: *See—*
Koerner, Ralph J.; Higbee, John E.; and Henderson, Martin C., 3,775,742.

Canon Kabushiki Kaisha: *See—*
Kagami, Isao, 3,775,629.
Moriyama, Inao, 3,775,002.

Canron, Inc.: *See—*
Rousse, Robert, 3,775,618.

Cantales, Joseph. Spackling knife tool. 3,774,252, Cl. 7-14.10a.

Capitol Products Corporation: *See—*
Cribben, James T.; and Miller, Joseph J., 3,774,343.

Capuano, Guido A.; and Davenport, William G., to Canadian Patents and Development, Limited. Electroplating aluminum. 3,775,260, Cl. 204-14.00r.

Carcia, Peter P.: *See—*
Burgarella, John P.; Carcia, Peter P.; and Kee, Richard C., 3,774,516.

Carlile, Alfred E.; and Cox, Bernard H., to Textron, Inc. Molded plastic snap fastener for strip of components therefor. 3,774,756, Cl. 206-56.0ab.

Carlsen, George David, II, to McCulloch Corporation. Battery charger. 3,775,659, Cl. 320-21.000.

Carlson, David John, to RCA Corporation. Modulator system. 3,775,555, Cl. 178-6.800.

Carlson, William A.: *See—*
Smith, Sidney L.; and Carlson, William A., 3,775,164.

Carol, John A., Jr., to General Motors Corporation. Fuel level sensor for a rotating fuel tank. 3,774,449, Cl. 73-313.000.

Carpenter, Louis M.; and Dunn, Kenneth L., to Carpenter Manufacturing Co., Inc. Electrical insulation cutter and stripper. 3,774,478, Cl. 81-9.510.

Carpenter, Lynn A., to Corning Glass Works. Glass forming apparatus. 3,775,082, Cl. 65-162.000.

Carpenter Manufacturing Co., Inc.: *See—*
Carpenter, Louis M.; and Dunn, Kenneth L., 3,774,478.

Carpetech Corporation: *See—*
Anthony, Peter D.; Colt, James G.; and Fourharakis, Golon, 3,774,262.
Colt, James G., 3,774,261.
Emus, Ronald W., Jr., 3,774,260.

Carr, Norman L., to Gulf Research & Development Company. Reactivity control in petrochemical and refinery processes. 3,775,494, Cl. 260-667.000.

Carreira, Leonard M.: *See—*
Tulagin, Vsevolod; and Carreira, Leonard M., 3,775,107.

Carrell, Terry E., to United States of America, Air Force. Ultra hard communications antenna. 3,775,772, Cl. 343-719.000.

Carribean Cashew Company: *See—*
Nemir, Clarence T., 3,774,526.

Carter, Cecil O.: *See—*
Hutson, Tom, Jr.; and Carter, Cecil O., 3,775,510.

Carter, Donald L.: *See—*
Brown, Eugene C.; and Carter, Donald L., 3,775,648.

Carter, Harry R. Automatic vehicle driver aid system. 3,775,743, Cl. 340-32.000.

Cary Instruments: *See—*
Chupp, Vernon L.; and Duffield, Jack J., 3,775,010.

Case, Derek Frank; and Stammers, Kenneth, to International Computers Limited. Magnetic heads. 3,775,571, Cl. 179-100.20c.

Case, J. I., Company: *See—*
Horsch, Rudolf, 3,774,696.

Casper, Raymond C. Safety cord plug adaptor for electric outlet boxes. 3,775,729, Cl. 339-75.00p.

Cassels, Ian Gardner, to Ferranti, Limited. Laser having a gas-filled Fabry-Perot etalon mode selector. 3,775,699, Cl. 331-94.500.

Cast, Adolf; and Reich, Jorg M., to Reich, Karl M., Maschinenfabrik. Holding band for fasteners. 3,774,755, Cl. 206-56.0df.

Castejon, Francois: *See—*
Bieth, Jean Jaques; and Castejon, Francois, 3,775,261.

Caterpillar Tractor Company: *See—*
Bridwell, John W.; and Lohbauer, Kenneth R., 3,774,707.
Purcell, Robert J.; and Wehr, Kenneth E., 3,774,708.

Catlin, Robert T.: *See—*
Dawson, Chester H.; Catlin, Robert T.; and Haskell, Philip R., 3,774,355.

C.A.V. Limited: *See—*
Leonard, Gordon Harris, 3,774,467.

Cavallotti, Claudio: *See—*
Sacrini, Egeo; and Cavallotti, Claudio, 3,775,465.

Cavanaugh, Robert John, to Du Pont de Nemours, E. I., and Company. Epoxidation of hexafluoropropylene. 3,775,438, Cl. 260-348.50r.

Cavanaugh, Robert John; and Atkins, George Milton, Jr., to Du Pont de Nemours, E. I., and Company. Epoxidation of tetrafluoroethylene and chlorotrifluoroethylene. 3,775,440, Cl. 260-348.50r.

Cech, Robert E., to Copper Range Company. Method of extracting a metal from a material containing the metal in elemental form. 3,775,097, Cl. 75-103.000.

Celanese Corporation: *See—*
Braunstein, David M., 3,775,363.
Dunay, Michael, 3,775,213.
McClary, Edward B., 3,775,150.
Rams, Michael J.; Rosenthal, Arnold J.; and Clarke, Charles M., 3,775,520.

Central Glass Co., Ltd.: *See—*
Takenobu, Mareo; Yoshida, Takashi; Masuda, Hiroshi; Takahashi, Kenya; Fujioka, Kenji; Miura, Kansuke; Shibasaki, Masuo; and Yamamoto, Tetsuo, 3,775,491.

Centre Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See—*
Ribesse, Jacques Max, 3,774,673.

Ceskoslovenska Akadmie Ved: *See—*
Lim, Drahoslav; Sprincl, Ladislav; and Kopecek, Jindrich, 3,774,615.

Chafetz, Harry: *See—*
Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, 3,775,459.

Challenge-Cook Bros., Incorporated: *See—*
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Champion Corporation: *See—*
Graybeal, Michael Robin, 3,774,827.

Chao, Chester C.; Lange, Lawrence K.; Lindbloom, Eric; and Savkar, Anil D., to International Business Machines Corporation. Fault simulation system for determining the testability of a non-linear integrated circuit by an electrical signal test pattern. 3,75,598, Cl. 235-153.0ac.

Chao, Kwei C.: *See—*
Akin, Cavit; and Chao, Kwei C., 3,775,393.

Chao, Tay S.: *See—*
Turnquest, Byron W.; Chao, Tay S.; and Broman, Victor E., 3,775,321.

Charcharos, Anthreas Nicholas, to British Nuclear Design & Construction Limited. Nuclear reactor boiler system. 3,775,248, Cl. 176-65.000.

Chargematic, Inc.: *See—*
Potts, Vernon C., 3,775,660.

Chase, Raymond L. Ski device for wheeled vehicles. 3,774,926, Cl. 280-13.000.

Chechik, Ljudmila Efimovna: *See—*
Logvinenko, Dmitry Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Chechik, Ljudmila Efimovna; Shelyakov, Oleg Parfirovich; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; and Kuzmina, Ljudmila Nikolaevna, 3,774,885.

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Brusakov, Jury Ivanovich; Livshits, Irma Solomonovna; Kiselev, Vasily Pavlovich; Cheltsov, Vasily Mikhailovich; Avdeev, Mikhail Pavlovich; Marin, Semen Panteleevich; Alivoivodich, Miro Khristoforovich; Kulikov, Alexei Kuzmich; Berezhnoi, Ivan Arkhipovich; olpin, Pavel Ilich; Chernyakhovsky, Leonid Vladimirovich; Eltsova, Zoya Vasilievna; Medvedeva, Lidia Nikolaevna; and Kolomitsky, Fedor Mifodievich, 3,775,092.

Chem-E-Watt Corporation, mesne: *See—*
Kober, Frederick P., 3,774,589.

Chem-y, Fabriek Van Chemische Produkten N.V.: *See—*
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Chemerda, John M.: *See—*
Sletzinger, Meyer; Chemerda, John M.; and Gal, George, 3,775,429.

Chemical Construction Corporation: *See—*
Shah, Indravadan S., 3,775,532.

Chemplast Inc.: *See—*
Resenblatt, Solomon, 3,775,170.

Chemplate Corporation: *See—*
Zorn, Edward, 3,774,952.

Chemstitch, Inc.: *See—*
Miller, Philip, 3,774,250.

Cheng, Tai Chun; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Process for polymerizing conjugated dienes. 3,775,392, Cl. 260-94.20t.

Chernyakhovsky, Leonid Vladimirovich: *See—*
Brusakov, Jury Ivanovich; Livshits, Irma Solomonovna; Kiselev, Vasily Pavlovich; Cheltsov, Vasily Mikhailovich; Avdeev, Mikhail Pavlovich; Marin, Semen Panteleevich; Alivoivodich, Miro Khristoforovich; Kulikov, Alexei Kuzmich; Berezhnoi, Ivan Arkhipovich; olpin, Pavel Ilich; Chernyakhovsky, Leonid Vladimirovich; Eltsova, Zoya Vasilievna; Medvedeva, Lidia Nikolaevna; and Kolomitsky, Fedor Mifodievich, 3,775,092.

Cheron, Jacques, to Institut Francais de Petrole, des Carburants et Lubrifiants. Fuel cell. 3,775,186, Cl. 136-86.00r.

Chervenak, Michael C.; and Wolk, Ronald H., to Hydrocarbon Research, Inc. Treating tar sands. 3,775,296, Cl. 208-108.000.

Chevron Research Company: *See—*
Brown, Robert J. S., 3,775,671.
Ferm, Richard L., 3,775,147.
Hotten, Bruce W., 3,775,322.
Hughes, Thomas R., 3,775,505.
Platt, James L., Jr., 3,775,519.
White, Robert J., 3,775,072.

Cheype, Jean-Marie, to Societe Industrielle Honeywell Bull. Metallizable insulating varnish and process of fabrication thereof. 3,775,358, Cl. 260-21.000.

Chicago Pneumatic Tool Company: *See—*
Lesner, Richard S., 3,774,479.

Chidzhavadzes, Grigory Yasonovich: *See—*
Alexandrov, Adolf Moritsovich; Suladze, Ippolit Havidovidh; Kakhniashvili, Avtandil Semenovich; Aglitsky, Tbilisiv Vladimir Efimovish; Isimbler, Jury Abramovich; Kantor, Ilya Solomonovich; Chidzhavadzes, Grigory Yasonovich; Dzhanelidze, Vazha Venediktovich and Gigiberia, Abesalom Petrovich, 3,774,818.

Chien, Robert T.: *See—*
Boudreau, Paul E.; Chien, Robert T.; and Peck, Charles C., 3,775,746.

Childs, William A.: *See—*
Derry, Carl E.; and Childs, William A., 3,774,428.

Chinn, Leland J., to Searle, G. D., & Co. 1,7-Dihydroxy benz[e]indanes. 3,775,486, Cl. 260-613.00r.

Chinoin Gyodyszer-es Vegyeszeti Termekek Gyara Rt: *See—*
Harsanyi, Kalman; Nador, Karoly; Takacs, Kalman; Korbonits, Dezso; Kiss, Pal; Simay, Antal; Bodrogi, Istvan; Tardos, Laszlo; and Leszkovszky, Gyorgy, 3,775,409.

Chisholm-Ryder Company, Inc.: *See—*
Burton, Charles G., 3,774,381.

Chodorow, Marvin, to Leland Stanford Junior University, The, Board of Trustees. Method of and apparatus for particle detection and identification. 3,774,717, Cl. 181-.5np.

Chovanec, William; and Heck, Peter, to Art Steel Company. File locking mechanism. 3,774,985, Cl. 312-217.000.

Chowdhury, Priya Bandhu: *See—*
Mukherjee, Dilip Kumar; Chowdhury, Priya Bandhu; Sama, Jugal Kishore; Basu, Amarendra Nath; Basak, Nitya Goral; and Lahiri, Adinath, 3,775,286.

Christensen, Burton G.; and Firestone, Raymond A. Process for preparing cephalosporin compounds. 3,775,410, Cl. 260-243.00c.

Christie, Eugene P. Plastic bag construction. 3,774,838, Cl. 229-62.000.

Christie, Sharon K., to Universal Oil Products Company. Deodorizing and cleaning garbage disposals. 3,775,334, Cl. 252-171.000.

Christoff, Chris A., to Stevens Corporation. Rotary offset printing press with removable plate cylinder unit. 3,774,537, Cl. 101-219.000.

Chugai, Alexei Dmitrievich: *See—*
Logvinenko, Dmitry Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Chechik, Ljudmila Efimovna; Shelyakov, Oleg Parfirovich; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; and Kuzmina, Ljudmila Nikolaevna, 3,774,885.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Okui, Kiyoshi; Kaicu, Rokuro; Nagashima, Renpei; and Hinohara, Yoshikazu, 3,775,396.

Chupp, Vernon L.; and Duffield, Jack J., to Cary Instruments. Assymmetric double pass grating monochromator. 3,775,010, Cl. 356-101.000.

Church, Herman S.; and Hagener, James L., to Teledyne Mid-America Corporation. Bonded energy absorbing vehicle bumper mount construction. 3,774,951, Cl. 293-88.000.

Ciaudelli, Joseph P., to Avon Products, Inc. Process for preparing metal salts of dithiolbutanediols. 3,775,484, Cl. 260-609.00r.

Ciba-Geigy AG: *See—*
Bradley, Gordon Frank, 3,775,148.
Buhler, Arthur; and Mosimann, Walter, 3,775,045.
Habermeier, Juergen; and Porret, Daniel, 3,775,427.
Langley, Robert; and Warwick, William Gill, 3,775,149.

Ciba-Geigy Corporation: *See—*
Anderson, Donal C., 3,775,539.
Bosshard, Rene; Muller, Jean-Claude; and Ebert, Edith, 3,775,425.

Cie Generale de Radioloqie: *See—*
Hommerin, Michel, 3,775,613.

Cincinnati Milacron Inc.: *See—*
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Cincinnati Milacron-Heald Corporation: *See—*
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Cincinnati Time Recorder Company, Inc.: *See—*
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Cities Service Company: *See—*
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Roth, Shirley H., 3,775,169.
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Rhoades, Vallghan W., 3,775,073.
Citron, Joel D., to Du Pont de Nemours, E. I., and Company. Polymers having silicon containing end groups and a process for their preparation. 3,775,386, Cl. 260-80.30e.
Clachan, Margaret Loudon; and Pears, Gordon Edmund Alfred, to Imperial Chemical Industries, Limited. Hydrophobic film coated with acid-modified butadiene copolymer. 3,775,160, Cl. 117-76.00f.
Clae, Eugene J., to Hahn & Clay. Method of manufacturing a pressure vessel assembly. 3,774,296, Cl. 29-471.300.
Clapham, Leslie, to United Kingdom Atomic Energy Authority. Nuclear reactor fiel elements. 3,775,249, Cl. 176-78.000.
Clark, Donald B., to National Cash Register Company, The. Process for film-coating articles. 3,775,172, Cl. 117-155.0ua.
Clark, Paul H., Jr., to Postelle Rod Service, Inc. Method and apparatus for modifying sucker rod. 3,774,292, Cl. 29-426.000.
Clark, Paul P., to Sturgis Molded Products Company. Mold design incorporating a collet. 3,774,874, Cl. 249-59.000.
Clark, William C.: *See—*
Houston, William L., Jr.; and Clark, William C., 3,775,506.
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Clendenen, Harold K.: *See—*
Bhatia, Vijay H.; and Clendenen, Harold K., 3,774,466.
Clites, Philip G.; and Beall, Robert A., to United States of America, Interior. Induction melting of metals in cold, self-lined crucibles. 3,775,091, Cl. 75-65.000.
Clougherty, Edward V.; Kaufman, Lawrence; and Kalish, David, to Man-Labs, Incorporated. Refractory diboride materials. 3,775,137, Cl. 106-44.000.
Clougherty, Edward V.; and Kalish, David. Refractory diboride materials. 3,775,138, Cl. 106-44.000.
Clow Corporation: *See—*
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Clow, Hugh, to EMI Limited. Magnetic recording media. 3,775,179, Cl. 117-240.000.
CMI Corporation: *See—*
Allen, Thomas E., 3,774,401.
Barton, Robert M., 3,775,018.
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Feudale, Victor John, 3,774,724.
Coe, Robert L. Weekly cycle timing mechanism with shaft securing means for predetermined adjustable programming cam assembly. 3,775,574, Cl. 200-38.0ba.
Coelho, Daniel. Adjustable picture frame. 3,774,331, Cl. 40-152.100.
Cofer, Daniel B.: *See—*
Lenaeus, George E.; Cofer, Daniel B.; and Murphy, John H., 3,774,669.
Coffield, Thomas H.; and Keblys, Kestutis A., to Ethyl Corporation. Method of winning copper, nickel, and other metals. 3,775,099, Cl. 75-119.000.
Cognat, Michel, to Rhone-Poulenc S.A. Gynaecological surgical device. 3,774,600, Cl. 128-131.000.
Cole, David B.; and Dean, Joseph E., to Modulex, Inc. Door casing assembly. 3,774,345, Cl. 49-504.000.
Cole, George S.: *See—*
Cole, George S.; and Ritzenthaler, Richard L., 3,774,643.
Cole, George S.; and Ritzenthaler, Richard L., 50% to Cole, George S., 39% to Hartley, Cavour, 5% to Fryberger, H. B., Jr., 2% to Hartley, Alfred, Baker, John O., 1% to Hartley, Guilford and 1% to Ellison, Donald G. Proportioning valve. 3,774,643, Cl. 137-36.400.
Cole, Theodore P., Jr.; and Turnage, John W., to United States Steel Corporation. Panel and core. 3,774,365, Cl. 52-615.000.
Colgate-Palmolive Company: *See—*
Borrello, Giuseppe, 3,775,331.
De Salva, Salvatore Joseph; and Costello, Christopher H., 3,775,538.
Colight, Inc.: *See—*
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Collette, Richard L.: *See—*
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Collins, John L., to Minnesota Mining and Manufacturing Company. Photocopier exposure control. 3,775,009, Cl. 355-83.000.
Collins, Larry C.: *See—*
Ulm, Ralph E.; Phillips, Claude F.; Sullivan, Michael J.; Collins, Larry C.; and Parrent, William Russell, 3,775,024.
Collins Radio Company: *See—*
Frazier, Melvin A., 3,775,707.
Strathaman, Lyle R., 3,775,760.
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Into, Henry A., 3,774,500.
Verner, Dalton R., 3,775,578.
Colt, James G.: *See—*
Anthony, Peter D.; Colt, James G.; and Fourharakis, Golon, 3,774,262.
Colt, James G., to Carpetech Corporation. Carpet and upholstery cleaning with fluid pumping safety feature. 3,774,261, Cl. 15-321.000.
Commarmot, Roger, to Rhone-Poulenc S.A. Valve. 3,774,639, Cl. 137-625.480.
Commercial Solvents Corporation: *See—*
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Commissariat a l'Energie Atomique: *See—*
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Commonwealth Steel Company Limited: *See—*
Hamilton, Frank Alexander; and Calcott, Thomas George, 3,774,856.
Communications Satellite Corporation: *See—*
Cotner, Calvin Buchanan; and Standing, Arthur Frederick, 3,775,644.
Compagnie Generale d'Electricite: *See—*
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Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
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Compoly, Albert W.; Kautz, Robert F.; Eckenfelder, Robert C.; and Foerch, Francis X., to Bendix Corporation, The. Constant frequency power inverter having silicon controlled rectifier multibridge inputs for output wave shaping with variable phase control fr overload conditions. 3,775,662, Cl. 321-5.000.
Cone-Blanchard Machine Company, mesne: *See—*
Brown, Roger W.; and Ranney, Hinkley H., 3,774,501.
Conlee, George D. Method of forming a worm shaft. 3,774,295, Cl. 29-456.000.
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Conner, James Mervyn: *See—*
Meysenburg, Raymond Richard; Recker, Robert James; Wetrich, Peter Donald; Kelly, Charles Whippel; Hertzog, William Frederick; and Conner, James Mervyn, 3,774,475.
Consoles Unlimited, Inc.: *See—*
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Consolidated Electric Corporation: *See—*
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Kerfoot, Oliver C.; Krehbiel, Delmar D.; and Feighner, George C., 3,775,325.
McGuire, Stephen E.; and Kenfoot, Oliver C., 3,775,445.
Washecheck, Paul H.; Portwood, Owen, Jr.; and Starks, Charles M., 3,775,450.
Conway, Joseph E.; and Keilbaugh, William A., to Crane Co. Continuous ion exchange. 3,775,310, Cl. 210-33.000.
Conway, Terry Thomas: *See—*
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Cook, David Langham, to Square D Company. Pneumatic timer attachment for an electromagnetic relay. 3,775,710, Cl. 335-61.000.
Cook, Galen B. Forced expirometer. 3,774,595, Cl. 128-208.000.
Cook, Galen B. Compliable cavity speculum. 3,774,596, Cl. 128-5.000.
Cook, Galen B. Surgical hemostatic light. 3,774,614, Cl. 128-325.000.
Cook, John Hayward, to English Numbering Machines Limited. Counting device. 3,774,841, Cl. 235-1.00c.
Cook, Shirl E.: *See—*
Williams, Kenneth C.; and Cook, Shirl E., 3,775,454.
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Hostettler, Fritz; Cook, William H.; and Lombardi, Frank G., 3,775,354.
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Cootes, Harold Edwin, to AMP Incorporated. Tool for securing contacts to flat multi-conductor of cable. 3,774,284, Cl. 29-203.00c.
Copper Range Company: *See—*
Cech, Robert E., 3,775,097.
McKie, Robert T., 3,775,094.
Coran, Aubert Yaucher; and Kerwood, Joseph Edward, to Monsanto Company. Poly(thioamides). 3,775,428, Cl. 260-326.00s.
Corbin, John Alphonso S.; Schumann, Joseph M.; Watson, D. E.; and Stayboldt, Paul J., to Trionics, Inc. Catheterization assembly. 3,774,591, Cl. 128-2.00f.
Corialo, Samuel D.: *See—*

Schaeffer, Robert A.; White, William T.; and Corialo, Samuel D., 3,775,008.

Corley, William P.; and Glass, James D., to Anderson Electric Corporation. Tiltable corona ring assembly. 3,775,553, Cl. 174-144.000.

Cornelius Company, The: *See—*
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Corning Glass Works: *See—*
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Bognar, Lewis L., 3,775,085.
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Keck, Donald B.; and Maurer, Robert D., 3,775,075.
Nicastro, Carmine A., Jr.; Vander Noordaa, Roelant S. L.; and Ward, William A., 3,775,077.
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Sundstrom, Roy N.; and Wisner, William R., 3,775,079.

Cornwall Corporation: *See—*
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Corsette, Douglas F., to Diamond International Corporation. Liquid product dispenser. 3,774,810, Cl. 222-146.000.

Corte, Francisco Barcelloni. Manual labeling device. 3,774,744, Cl. 197-6.700.

Corvino, Ralph A.; and Martin, John P., to Flume Stabilization Systems, Inc. U-tube stabilizer having adjustable crossover duct and end chambers. 3,774,567, Cl. 114-125.000.

Costello, Christopher H.: *See—*
De Saiva, Salvatore Joseph; and Costello, Christopher H., 3,775,538.

Costelloe, Patrick, to British Steel Corporation. Method for passivating a zinc surface. 3,775,193, Cl. 148-6.200.

Cotner, Calvin Buchanan; and Standing, Arthur Frederick, to Communications Satellite Corporation. Adjustable microstrip substrate holder. 3,775,644, Cl. 317-101.0cc.

Cottin, Jean Claude, to Produmatic Chateauneuf. Detent positioning device. 3,774,470, Cl. 74-527.000.

Couch, Robert P.; Rossbach, Dennis R.; Vopalensky, Robert A.; and Fowler, Robert T., to United States of America, Air Force. Apparatus for indicating the impending failure of a jet engine. 3,775,763, Cl. 340-236.000.

Council of Scientific & Industrial Research: *See—*
Mukherjee, Dilip Kumar; Chowdhury, Priya Bandhu; Sama, Jugal Kishore; Basu, Amarendra Nath; Basak, Nitya Goral; and Lahiri, Adinath, 3,775,286.

Courtois, Andre; Lacombe, Yves; Laporte, Jean; and Kovacsik, Georges. Apparatus for measuring the oxygen consumption of a reducing organic medium. 3,775,060, Cl. 23-253.00r.

Covey, Rupert A.; Smith, Allen C.; and Hubbard, Winchester L., to Uniroyal, Inc. Substituted phenylethyl sulfites. 3,775,458, Cl. 260-456.00r.

Cox, Bernard H.: *See—*
Carlile, Alfred E.; and Cox, Bernard H., 3,774,756.

Craft, Donald William; and Porter, Francis J., Jr., to General Electric Company. Electro-chemical ion exchange membrane purge pump. 3,775,282, Cl. 204-266.000.

Craft, Roger L., to Gray Manufacturing Company, Inc. Two-speed pump. 3,775,027, Cl. 417-214.000.

Crane Co.: *See—*
Conway, Joseph E.; and Keilbaugh, William A., 3,775,310.

Crawford, James J.: *See—*
Frezzolini, James; and Crawford, James J., 3,775,661.

Creators Limited: *See—*
Kent, Cecil, 3,774,363.

Cribben, James T.; and Miller, Joseph J., to Capitol Products Corporation. Interlock threshold. 3,774,343, Cl. 49-467.000.

Criffield, Melvin E., to General Electric Company. Gas turbine engine fuel drain system and cooperating valve and pump means. 3,774,394, Cl. 60-39.090.

Crimmins, James W.; and Hartman, Peter W., to Data Transmission Sciences, Inc. Security phone. 3,775,562, Cl. 179-1.50r.

Crissy, Robert J., to NJM, Inc. System of and apparatus for printing business forms. 3,774,535, Cl. 101-142.000.

Crommentuyn, Gerardus J.: *See—*
Hendriks, Mathieu J. M.; and Crommentuyn, Gerardus J., 3,775,131.

Cronkhite, Leonard W., Jr.: *See—*
Merrill, Edward W., 3,774,623.

Crookham, Carter C.; and Billings, Robert C., to Clow Corporation. Butterfly valve body. 3,774,880, Cl. 251-307.000.

Cross, Robert A.; Testa, Anthony J.; and Thompson, Ralph N., to Amicon Corporation. Method of forming an electroplatable microporous film with exposed metal particles within the pores. 3,775,176, Cl. 117-227.000.

Crow, Thomas G.: *See—*
Flint, Graham W.; Hudson, William C.; Crow, Thomas G.; and Downes, George R., Jr., 3,775,586.

Crowley, Richard P. Embossed plastic surface covering and method of preparing same. 3,775,237, Cl. 161-116.000.

Crown Cork and Seal Company Inc.: *See—*
Leenaards, Antoine Joseph, 3,774,795.

Crump, Brian, to GKN Transmissions Limited. Apparatus for use in wheel counterbalancing. 3,774,456, Cl. 73-462.000.

Cruse, Clyde L., to Armco Steel Corporation. Furnace feeding and delivery apparatus. 3,774,786, Cl. 214-35.00r.

Csontos, Alan A., to Goodrich, B. F., Company, The. Preparation of liquid bromine-terminated polymers using radiation and a dibromo dichloro alkane. 3,775,276, Cl. 204-163.00r.

Culligan International Company: *See—*
Lyall, Charles E.; Bennett, Blair O.; and Hogan, Lawrence Russell, 3,774,763.

Cumbo, Charles Carmen, to Du Pont de Nemours, E. I., and Company. Solid, water-soluble trans-acid complexes with chromium (III) nitrate. 3,775,455, Cl. 260-438.50r.

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Morris, Herbert C.; Cooper, Thomas A.; Cummins, Billy H.; and Sweeney, Donald E., Jr., 3,775,298.

Cumpston, Edward H., Jr. Damp pulp moulding. 3,775,525, Cl. 264-115.000.

Cunningham, Gerald A.: *See—*
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Currence, John L., Jr.: *See—*
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Cushing, Ralph H., to Northern Natural Gas Company. System for roadbed traversing by pipeline. 3,774,403, Cl. 61-72.700.

Cutler-Hammer, Inc.: *See—*
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CW Radiation, Inc.: *See—*
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Dabe, Dolores T., to Poirette Corsets, Inc. Shirred girdle. 3,774,621, Cl. 128-539.000.

Daghe, Joseph: *See—*
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Dahlmans, Johannes J.; and Kerkhoffs, Pieter L., to Stamicarbon N.V. Chemical binding of an amino acid to a chlorosulfonated polymer carrier. 3,775,378, Cl. 260-78.00a.

Daido Namarikakoki Co., Ltd.: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
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Danfoss A/S: *See—*
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Danielsson, Curt Aslov, to Demeco Medical Products Aktiebolag. Infusion cannula assembly. 3,774,604, Cl. 128-214.400.

Dank, Milton, to Litton Business Systems Inc. Lamp arrangement. 3,775,609, Cl. 240-41.35c.

Danna, Peter A., to Olin Corporation. Mercury diaphragm chlor-alkali cell and process for decomposing alkaki metal halides. 3,775,272, Cl. 204-98.000.

Daringer, Ronald G.: *See—*
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Dart Industries, Inc.: *See—*
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Data Transmission Sciences, Inc.: *See—*
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D'Audiffret, Yves Tollard: *See—*
Guhr, Gisela; von Mikusch-Buchberg, Johannes Donatus; Heinrich, Wolfgang; Bandzauner, Arnold; and D'Audiffret, Yves Tollard, 3,775,448.

Dauvergne Bros. Inc.: *See—*
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Dauvergne, Hector A., to Dauvergne Bros. Inc. Gas accelerator. 3,774,390, Cl. 60-13.000.

Davenport, William G.: *See—*
Capuano, Guido A.; and Davenport, William G., 3,775,260.

David, Leonard E. Snowblower adapter means. 3,774,321, Cl. 37-43.001.

Davidson, James R., to Xerox Corporation. Forms reproduction apparatus. 3,775,007, Cl. 355-8.000.

Davies, John Moseley; and Clarke, John Colin. Installation including a prime mover and means for extracting energy from a hot fluid medium and using it to drive the prime mover. 3,774,392, Cl. 60-36.000.

Davis, Charles H. Pump unit for water supply. 3,775,028, Cl. 417-267.000.

Davis, James B.: *See—*
Rundell, Herbert A.; and Davis, James B., 3,774,445.

Davis, James V.; and Ivsan, Thomas J., to Teledyne Industries, Inc. Multistage axial flow compressor. 3,775,023, Cl. 415-199.00r.

Dawson, Chester H.; Catlin, Robert T.; and Haskell, Philip R., to Remington Arms Company, Inc. Armored metal file band and production thereof. 3,774,355, Cl. 51-395.000.

Day, John Anthony; and Vaughan, John Melville Graham Powell, to Healey Mouldings Limited. Handle assemblies for articles of hollowware. 3,774,263, Cl. 16-114.000.

De Baan, Johannes J.: *See—*
Willich, Jean Herbert; and De Baan, Johannes J., 3,774,895.

De Jesus, Charles, to Polaroid Corporation. Non-bouncing hinged flare baffle. 3,774,517, Cl. 95-42.000.

De Jong, Aric N., to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van de Ryksverdediging. Device for composing an infrared image. 3,775,619, Cl. 250-347.000.

De Nobel, Dirk; and Kock, Hendrikus Gerardus, to U.S. Philips Corporation. Schottky contact devices and method of manufacturing. 3,775,200, Cl. 156-17.000.

De Ruiter, Ernest H.; and Heimlinger, Hans K., to Mallinckrodt Chemical Works, mesne. Selective hydrogenation of tri- and tetrazoloisoquinolines. 3,775,417, Cl. 260-288.00r.

De Salva, Salvatore Joseph; and Costello, Christopher H., to Colgate-Palmolive Company. Inhibition of perspiration. 3,775,538, Cl. 424-65.000.

De Simone, Renato; Beranger, Alessandro; and Scaramucci, Antonietta, to Snam Progetti S.p.A. Method for inhibiting the polymerization of conjugated dienes. 3,775,493, Cl. 260-666.500.

De Vinney, George L. Apparatus and method for dyeing textile strand materials. 3,775,054, Cl. 8-149.000.

DEA Products, Inc.: *See*—
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Dean, George A.: *See*—
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Dean, James T., III, to Global Marine Inc. 360° rotary anchoring system with differential drive capability. 3,774,562, Cl. 114-.50d.

Dean, Joseph E.: *See*—
Cole, David B.; and Dean, Joseph E., 3,774,345.

Debus, Henri Robert; Van Tongelen, Marcel; and Cahen, Raymond M., to Labofina S.A. Hydrocarbon conversion. 3,775,495, Cl. 260-668.00d.

Debus, Henri Robert; Van Tongelen, Marcel; and Cahen, Raymond M., to Labofina S.A. Hydrocarbon conversion. 3,775,499, Cl. 260-668.00a.

Decker, Hanns; and Stockmann, Helmut, to Klockner-Humboldt-Deutz Aktiengesellschaft. Large gyratory crusher. 3,774,857, Cl. 241-209.000.

Decker, Raymond E., to Challenge-Cook Bros., Incorporated. Clean out assembly for a concrete pump and pipeline. 3,774,633, Cl. 137-493.800.

Dederer, Robert R.; and Vanderhoof, Frank B., to Metramatic Corporation, The. Merging conveyor. 3,774,748, Cl. 198-32.000.

DeDiemar, Ronald B.: *See*—
Archer, Fred Curtis; DeDiemar, Ronald B.; and Breiling, Edward H., 3,774,858.

Deere & Company: *See*—
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Meysenburg, Raymond Richard; Recker, Robert James; Wetrich, Peter Donald; Kelly, Charles Whippel; Hertzog, William Frederick; and Conner, James Mervyn, 3,774,475.
Murphy, Gerald Francis; Ehlers, Stanley Harold; and Arthur, Richard, 3,774,970.
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Deering Milliken Research Corporation: *See*—
Young, Freeman M.; and Lock, Michael V. (said Lock assor. to), 3,775,165.

Delaurentis, Angelo A.: *See*—
Wentz, Edward C.; Ellis, Belvin B.; and Delaurentis, Angelo A., 3,775,722.

Delisle, Jean-Paul; Rulleau, Alain; and Prouteau, Lucien, to Commissariat a l'Energie Atomique. Device for locating a fuel assembly can failure in a nuclear reactor. 3,775,245, Cl. 176-19.0ld.

Demeco Medical Products Aktiebolag: *See*—
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Denes, Peter A. Composite soft magnetic materials. 3,775,328, Cl. 252-62.550.

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Foret, Pierre G.; and Donohoe, John William, 3,774,904.

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Depuy, Francis A.; and Santore, Nicholas T., to Mount Hope Machinery Company. Sheet guiding and width-control apparatus. 3,774,271, Cl. 26-66.000.

Derichs, Josef, to Schlafhorst & Co. Device for winding or unwinding material conducted in web or linear form, particularly groups of textile threads. 3,774,415, Cl. 66-86.00a.

Derr, Carl B.: *See*—
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Derry, Carl E.; and Childs, William A. Thermally insulated building material and method and means for the manufacture thereof. 3,774,428, Cl. 72-46.000.

DeSantis, Raymond P.: *See*—
Smith, Joseph E.; DeTroyer, Georges D.; and DeSantis, Raymond P., 3,775,032.

Desbois, Theodore J. Live bait fishhook. 3,774,337, Cl. 43-44.600.

Deshich, Dushan Carl, to Signode Corporation. Shock absorbing fastening tool assembly. 3,774,833, Cl. 227-156.000.

Design Center, Inc.: *See*—
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DeTroyer, Georges D.: *See*—
Smith, Joseph E.; DeTroyer, Georges D.; and DeSantis, Raymond P., 3,775,032.

Deurbrouci, Albert W.: *See*—
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Deutsche akademie des Wissenschaften zu Berlin: *See*—
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Di Piazza, Gerald Charles; Onno, Peter; Oswald, Henry; and Schaible, Clifford Warren, to Bell Telephone Laboratories, Incorporated. System for resolving the sizes and centroid locations of buried objects. 3,775,765, Cl. 343-5.00r.

Diagnostic Instruments, Inc.: *See*—
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Dickens, Lawrence E., to Westinghouse Electric Corporation. Semiconductor diode mounting and resonator structure for operation in the EHF microwave range. 3,775,701, Cl. 331-96.000.

Diebold, Incorporated: *See*—
Ekama, Pieter J., 3,774,863.

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Pfeiffer, Heinrich, 3,775,033.

Diehl, John A., 1/2 to Hayes, Richard H. System for measurement of volume of flow of a flowable granular-like material. 3,774,446, Cl. 73-194.00r.

Dien, Sam. Combination green fixing tool and ball marker. 3,774,913, Cl. 273-162.00d.

Diesel Kiki Kabushiki Kaisha: *See*—
Matsubara, Hiroshi, 3,774,715.

Dieter Jaworek; Wolfgang, Gruber; and Ulrich, Bergmeyer Hans, to Boehringer Mannheim G.m.b.H. Water-insoluble carrier-bound proteins. 3,775,253, Cl. 195-63.000.

Dillard, George M.; and Antoniak, Charles E., to United States of America, Navy. Method and means for performing distribution-free detection of signals in noise. 3,775,770, Cl. 343-100.0cl.

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Dodwell, Geoffrey Michael, to Ilford Limited. Photographic gelatino silver halide emulsion. 3,775,129, Cl. 96-84.00r.

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Dolby, Ray Milton, to Dolby Laboratories, Inc. Compressor and expander circuits having control network responsive to signal level in circuit. 3,775,705, Cl. 333-14.000.

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Donnell, Anne R. Methylated muconic acid hydrazides. 3,775,089, Cl. 71-76.000.

Donnelly, John F., to Donnelly Mirrors, Inc. Rearview periscope adjustment means for vehicles. 3,774,996, Cl. 350-302.000.

Donnelly Mirrors, Inc.: *See*—
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Peterson, Alan H.; and Dormish, Frank L., 3,775,294.

Dorst, Hans-Rudiger; and Zielinski, Helmut, to VEB Qualitats- und Edelstahl-Kombinat Hennigsdorf/Kr. Method and apparatus for thermal analysis of metallic melts. 3,774,441, Cl. 73-17.00r.

Douglas, Colin Grahame, to Westinghouse Brake and Signal Company, Limited. Display apparatus. 3,775,740, Cl. 340-23.000.

Douglas, Henry, to General Motors Corporation. Tool block. 3,774,484, Cl. 82-36.00r.

Dow Chemical Company, The: *See*—
Bockstahler, Earl R., 3,775,478.
Lawrence, Garth D.; and Ott, Jack J., 3,775,530.
Layne, Gilbert S., 3,775,093.

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Driggs, Leslie W. Apparatus for peeling eggs. 3,774,525, Cl. 99-568.000.
Drinkard, William Charles, Jr.; and Taylor, Brian W., to Du Pont de Nemours, E. I., and Company. Hydrocyanation of olefins. 3,775,461, Cl. 260-465.300.
Driscoll, Gary L.; Duling, Irl N.; Gates, David S.; and Warren, Robert W., to Sun Research and Dvelopment Co., mesne. Branched hydrocarbons in the C_{16}-C_{40} range having maximally crowded geminal methyl groups. 3,775,503, Cl. 260-676.000.
Dromsky, John A., to Texas Instruments, Incorporated. Composite material, tubing made from the material, and methods for making the material and tubing. 3,775,194, Cl. 148-12.000.
Du Pont de Nemours, E. I., and Company: *See*—
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Dubois, Robert, 20% to Lee, Raymond, Organization, Inc. Fishing shock absorber sinker and drag. 3,774,336, Cl. 43-42.720.
Dubourg, Jean, to Rhone-Poulenc S.A. Compositions with a simultaneous lubricating and phosphatising action for the surface treatment of steels for the purpose of cold forming operations, and preparation and use of such compositions. 3,775,323, Cl. 252-49.50.
Duembgen, Gerd; and Platz, Rolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for removing carbon dioxide from acetylene. 3,775,507, Cl. 260-679.00a.
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Duggins, Ray B. Process for curing methyl methacrylate in the presence of peroxy catalysts. 3,775,364, Cl. 260-41.00r.
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Dunn, Elman R., to Litton Industries, Inc. Horizontal double disc grinder with anti-vacuum control. 3,774,348, Cl. 51-111.00r.
Dunn, Kenneth L.: *See*—
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Duong Vinh, Louis-Andre, to Etablissements Guilliet. Method for cutting a shaped member from a wood block. 3,774,661, Cl. 144-326.00r.
Durr, Henry H., 10% to Haller, Philip L. Trailer anti-jackknife device. 3,774,941, Cl. 280-432.000.
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Dursi, Ladislads; and Dingler, Helmuth, to Siemens Aktiengesellschaft. Method and apparatus for controlling a heat exchanger. 3,774,396, Cl. 60-106.000.
DuVall, Wilbur E., to Xerox Corporation. Method and apparatus for transducer temperature compensation. 3,775,655, Cl. 318-634.000.
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Ecker, Fred L. Retractable concrete form. 3,774,875, Cl. 249-178.000.
Eckert, John C.; and Enloe, Kenneth M., to Kimberly-Clark Corporation. Prefolded disposable diaper. 3,774,610, Cl. 128-287.000.
Eckert, Rudolf J. A., to Shell Oil Company. Lubricant compositions containing a viscosity index improver. 3,775,329, Cl. 252-59.000.
Eckle, Otto, to KOMET Stahlhatter- und Werkzeugfabrik Robert Breuning GmbH. Cutting-off tool. 3,774,276, Cl. 29-96.000.
Edeleanu Gesellschaft m.b.H.: *See*—
Franz, Hermann; and Kunert, Max, 3,775,295.
Edlin, Frank E., to International Plastics, Inc. Porous plastic structures having apertures. 3,774,648, Cl. 138-177.000.
Edlund, Karl-Johan, to AWAB Anderstorps Werkstads A/B. Method of destructing waste and an apparatus for carrying out said method. 3,774,852, Cl. 241-3.000.
Edmunds, John O., to General Motors Corporation. Charging pressure control for fluid unit. 3,774,400, Cl. 60-358.000.
Edwards, Frank M., to American Hospital Supply Corporation. Ultrasonic nebulizer for inhalation therapy. 3,774,602, Cl. 128-194.000.
Edwards, John A.; and Fried, John H., to Syntex Corporation. Novel phenanthrene-2-carboxylic acids and derivatives thereof. 3,775,471, Cl. 260-514.500.
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Egeland, Olav, to A/S Computas. Device for the detection of wear. 3,775,680, Cl. 324-65.00p.
Eger, Mathias. Collapsible tow bar. 3,774,949, Cl. 293-69.000.
Eggenweiler, Robert B.; and Duffy, James J., to Hooker Chemical Corporation. Flame retarding celluloscis using tetrakis (hydroxymethyl) phosphonium chloride. 3,775,155, Cl. 117-62.200.
Eggimann, Fritz; and Guanella, Gustav, to Patelhold Patentverwertungs- & Electro Holdings AG. Apparatus for automatically checking pulse-distortion correction in a signal channel. 3,775,685, Cl. 325-42.000.
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Ehrat, Kurt. Key-operated mechanical lock. 3,774,424, Cl. 70-383.000.
Eino, Ernest; Moloney, William F., Jr.; and Toledo, Emil, to United States of America, Navy. Use of lead in a nonorganic-containing copper pyrophosphate bath. 3,775,268, Cl. 204-52.00r.
Eisele, Wolfgang; Hohe, Heinz; Von Ammon, Hans; Beck, Fritz; and Suter, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Electrolytic cell including bipolar electrodes having two spaced chambers in each electrode for feeding and withdrawing electrolyte from the cell. 3,775,283, Cl. 204-268.000.
Eisentraut, Anna M., to Nuclear-Medical Laboratories, Inc. Method of determining thyroid function. 3,775,615, Cl. 250-303.000.
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Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, 3,774,893.
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Eklund, Phillip R.; and Campbell, Gabe L., said Campbell assor. to United States of America, Air Force. Method of fabricating hollow balls for use in rolling contact bearing applications. 3,774,280, Cl. 29-148.40b.
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Eley, Edgar R., to Westinghouse Electric Corporation. Method of constructing a transformer winding assembly. 3,774,298, Cl. 29-605.000.
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Ellestad, George Alfred; and McGahren, William James, to American Cyanamid Company. Antimicrobial metabolite S491 beta and S491 Nu and chemical derivatives. 3,775,433, Cl. 260-343.300.
Ellis, Alan F.; and Sabourin, Edward T., to Gulf Research & Development Company. Process for converting an olefin to a product containing higher and lower olefins. 3,775,509, Cl. 260-683.00d.
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Enters, Edward W.; Price, Warren H.; and Hochwitz, Lynn E., to Gilson Bros. Co. Snow-handling implement with belt-driven impeller and coacting labyrinthian baffle. 3,774,322, Cl. 37-43.00r.
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Ettischer, Helmut; Ort, Wolfgang; Simon, Horst; and Steisslinger, Kurt, to Eastman Kodak Company. Device for preventing film movement in cameras. 3,774,513, Cl. 95-31.0fm.
Etzold, Gerhard; Hintsche, Rainer; and Langen, Peter, to Deutsche akademie des Wissenschaften zu Berlin. Novel cyctostatic 2',3'-didesoxy-3'-fluoro-pyrimidine-nucleosides. 3,775,397, Cl. 260-211.50r.
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Fagan, Edmund I.; and Keeler, Jack D., to EMF Corporation. Sorting and collating apparatus. 3,774,906, Cl. 271-64.000.
Faillon, Georges; and Firmain, Gerard, to Thomson-CSF. Power amplifier klystrons operating in wide frequency bands. 3,775,635, Cl. 315-5.430.
Falk, Richard A. Molten metal sampler. 3,774,453, Cl. 73-425.40r.
Farbenfabriken Bayer Aktiengesellschaft: *See*—
Bossert, Friedrich; and Vater, Wulf, 3,775,422.
Farber, Sheldon, to National Cash Register Company, The. Furo[3,4-b]pyridine-7(5H)-ones. 3,775,424, Cl. 260-295.00b.
Farbwerke Hoechst Akteingesellschaft vormals Meister Lucius & Bruning: *See*—
Kampe, Klaus-Dieter, 3,775,468.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See*—
Spietschka, Ernst; and Landler, Josef, 3,775,434.
Farina, Anthony P.: *See*—
Balamuth, Lewis; Koris, Arthur; and Farina, Anthony P., 3,774,317.
Farr, Glyn Phillip Reginald, to Girling Limited. Brake adjusters. 3,774,733, Cl. 188-196.00d.
Farrell, Robert G.; and Binkley, Carl R., to Sperry Rand Corporation. Power transmission. 3,774,635, Cl. 137-614.200.
Fasching, Herman J.; and Kasel, John A., to Sperry Rand Corporation. Method of thin coating a memory stack. 3,775,215, Cl. 156-208.000.
Fassbender, Frederick A., to Frank, S. M., & Co., Inc. Smokers pipe. 3,774,624, Cl. 131-201.000.
Fassbinder, Hans Georg: *See*—
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, 3,774,893.
Fassbinder, Hans-Georg: *See*—
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, 3,774,894.

Faulkner, Doris Clay; and Swann, Hal R., Jr. Knock-down sofa. 3,774,966, Cl. 297-440.000.

Fechner, Gerd: *See—*
Brosch, Leo; Fechner, Gerd; and Reichert, Eduard, 3,775,625.

Feedmatic-Detroit, Inc.: *See—*
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Feighner, George C.: *See—*
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Feldman, Herbert B.: *See—*
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Felkel, Georg: *See—*
Klaus, Kaspar; and Felkel, Georg, 3,774,789.

Fenton, Sidney Desmond, to Storey Brothers and Company Limited. Vehicle seats and other upholstered items. 3,774,968, Cl. 297-452.000.

Fergason, James L.: *See—*
Taylor, Ted R.; and Fergason, James L., 3,775,757.

Ferlazzo, Natale: *See—*
Calcagno, Benedetto; Ferlazzo, Natale; and Ghirga, Marcello, 3,775,346.

Ferm, Richard L., to Chevron Research Company. White mulch composition. 3,775,147, Cl. 106-271.000.

Ferranti, Limited: *See—*
Cassels, Ian Gardner, 3,775,699.

Feudale, Victor John, to Cochin, J. D., Manufacturing Company. Safety door assembly for vehicle lift. 3,774,724, Cl. 187-8.620.

Fiat Societa per Azioni: *See—*
Baldwin, Philip Sidney, 3,774,973.

Fichtel & Sachs AG: *See—*
Kreuzer, Dieter, 3,774,919.

Fidos, Henryk: *See—*
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Field, Bernard H. Skimmer trap. 3,774,767, Cl. 210-169.000.

Fielding, John C., to General Research Corporation. Air-traffic regulating systems. 3,775,767, Cl. 343-6.50r.

Filsinger, John F.; and Meuller, Roger P., to Textile Marking Machine Co., Inc. Marking machine. 3,774,529, Cl. 101-27.000.

Fink, Werner; and Kircher, Dieter, to ITT Industries, Inc. Antiskid brake control system. 3,774,977, Cl. 303-21.00p.

Firestone, Raymond A.: *See—*
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Firestone Tire & Rubber Company, The: *See—*
Beneze, Heinz Wilhelm, 3,775,528.
Cheng, Tai Chun; and Halasa, Adel F., 3,775,392.

Firm of Dock & Dock, The: *See—*
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Firmain, Gerard: *See—*
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Firmain, Gerard; and Egloff, Guy, to Thomson-CSF. Output window structure for microwave tubes. 3,775,709, Cl. 333-98.00p.

Fischer & Porter Company: *See—*
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Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. N-phenyl-N'-alkoxy ester ureas. 3,775,463, Cl. 260-471.00a.

Fischer, Jochen: *See—*
Scholl, Hans; and Fischer, Jochen, 3,774,558.

Fitch, Eugene K., to Teledyne, Inc. Fluid flow ratio and pressure ratio indicating device. 3,774,447, Cl. 73-205.00r.

Flaig, Raymond A. Case packing machine. 3,774,778, Cl. 214-1.0bt.

Flank, William H.; McEvoy, James E.; and Stuart, John R.; deceased (by Stuart, Clara M.; successor), to Air Products and Chemicals, Inc. Calcium sodium alumino disilicate foam. 3,775,136, Cl. 106-40.000.

Flaschar, Heinz: *See—*
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Flick, Robert H.: *See—*
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Flint, Graham W.; Hudson, William C.; Crow, Thomas G.; and Downes, George R., Jr., to International Laser Systems, Inc. Enclosed laser apparatus with remote workpiece control. 3,775,586, Cl. 219-121.001.

Flume Stabilization Systems, Inc.: *See—*
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FMC Corporation: *See—*
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Foerch, Francis X.: *See—*
Compoly, Albert W.; Kautz, Robert F.; Eckenfelder, Robert C.; and Foerch, Francis X., 3,775,662.

Folderth, William M., Jr. Display rack for locksets. 3,774,320, Cl. 35-49.000.

Folkert, Henry, to Bank of Sunnyside, mesne. Orchard sprayer. 3,774,845, Cl. 239-78.000.

Fontaine, Marc F.: *See—*
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Forbes, Richard H. Musical instrument. 3,774,492, Cl. 84-170.000.

Fordice, Michael W.: *See—*
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Foret, Pierre G.; and Donohoe, John William, to Dennison Manufacturing Company. Ticket reader. 3,774,904, Cl. 271-11.000.

Forster, Hans-Joachim M.; Zaiser, Wolfgang; Hanke, Hans; and Bultmann, Friedrich, to Daimler-Benz Aktiengesellschaft. Hydrodynamic brake for vehicles, especially motor vehicles. 3,774,734, Cl. 188-296.000.

Forstmeyer, Udo, to Siemens Aktiengesellschaft. Control circuit for a high voltage power supply utilizing a rectifier cascade. 3,775,664, Cl. 321-18.000.

Foster, Robert D.; and Holleron, William K., to Monroe X-Ray Company. Pipeline X-ray inspection machine. 3,775,612, Cl. 250-497.000.

Foster, Thomas V.: *See—*
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Fourharakis, Golon: *See—*
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Fowler, Robert T.: *See—*
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Fram Corporation: *See—*
Hearn, Lerma L. E., 3,775,059.

Francia, Giovanni, to L. I. R. S.p.A., Laboratorio Italiano. Yarn feeding device. 3,774,829, Cl. 226-97.000.

Frank, S. M., & Co., Inc.: *See—*
Fassbender, Frederick A., 3,774,624.

Franklin, Richard P., mesne: *See—*
Gartner, William Joseph, 3,775,590.

Franson, Otto Elving, to Munksjo Aktiebolag. Carrying bag provided with a handle. 3,774,837, Cl. 229-54.00r.

Franz, Hermann; and Kunert, Max, to Edeleanu Gesellschaft m.b.H. Method for the decomposition of adducts of urea and N-paraffins. 3,775,295, Cl. 208-25.000.

Franz, Rudolph J., to Eaton Corporation. Automotive vehicle automatic temperature control system. 3,774,676, Cl. 165-23.000.

Frau Irma Ungerer: *See—*
Rodach, Alexander, 3,774,862.

Frazier, Melvin A., to Collins Radio Company. Method and means for antenna coupling. 3,775,707, Cl. 333-32.000.

Freads, Warren L.; and Jensen, Daniel L. Load restraining crossbar. 3,774,939, Cl. 280-179.00b.

Freche, John C.; Waters, William J.; and Ashbrook, Richard L., to United States of America, National Aeronautics and Space Administration. Method of forming articles of manufacture from superalloy powders. 3,775,101, Cl. 75-213.000.

Fredericks, George; Zeiringer, Rudolf; and Wiederwohl, Kurt, to List, Hans. Device for the suppression of reactions involving undue pressure rise in large-size containers. 3,775,622, Cl. 307-118.000.

Frederickson, Arthur R., to United States of America, Air Force. Method and system for secondary emission detection. 3,775,610, Cl. 250-305.000.

Frederickson, Stanley W.; and Watson, Ralph E., to Phillips Petroleum Company. Process for producing a mono-condensation product of an alkylene oxide and a mercaptan. 3,775,483, Cl. 260-609.00r.

Freed, Meier E.: *See—*
Potoski, John R.; and Freed, Meier E., 3,775,418.
Potoski, John R.; and Freed, Meier E., 3,775,419.

Freeze, John A.; Price, Elmo D., Jr.; and Wilburn, Garlington C., to Westinghouse Electric Corporation. Apparatus for indicating when current exceeds a predetermined level and when said level is exceeded for a predetermined period of time. 3,775,675, Cl. 34-51.000.

Frentrop, Arthur H., to Schlumberger Technology Corporation. Neutron generating systems. 3,775,216, Cl. 156-293.000.

Frezzolini Electronic Inc.: *See—*
Frezzolini, James; and Crawford, James J., 3,775,661.

Frezzolini, James; and Crawford, James J., to Frezzolini Electronic Inc. Rechargeable battery power source with gas-pressure switch. 3,775,661, Cl. 320-46.000.

Fried, John H.: *See—*
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Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
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Fried. Krupp G.m.b.H.: *See—*
Arndt, Friedrich-Karl, 3,774,502.

Fried, Sidney, to Speedcheck Systems, Inc. Merchandise bagging device and method. 3,774,370, Cl. 53-255.000.

Fries, Walter: *See—*
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Frigoscandia Contracting AB: *See—*
Persson, Per-Oskar; Astrom, Per Sture; and Emgard, Lennart S. A., 3,774,409.

Frisch, Erling; and Andrews, Harry N., to Westinghouse Electric Corporation. Reactor refueling method. 3,775,246, Cl. 176-30.000.

Frischkorn, Lawrence H.: *See—*
Sorkin, Jack L.; Kay, Percy M.; and Frischkorn, Lawrence H., 3,775,115.

Frogner, Willard B., to Hitemp Wires, Inc. Shield termination device. 3,775,732, Cl. 339-143.00r.

Fromson, Howard A. Metal coated structure. 3,775,157, Cl. 117-71.00r.

Frossard, Jacques Jean: *See—*
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Froumajou, Armand, to Automobiles Peugeot and Regie Nationale des Usines Renault. Arrangement of an engine-transmission unit in an automobile vehicle. 3,774,712, Cl. 180-82.00r.
Fryberger, H. B., Jr.: *See—*
Cole, George S.; and Ritzenthaler, Richard L., 3,774,643.
Fuchs, Hans, to Olympia Werke AG. Apparatus for adjusting the impact force of types. 3,774,745, Cl. 197-17.000.
Fuji Electrochemical Co., Ltd.: *See—*
Kobayashi, Seihin; Torii, Michihiro; Jojima, Takehiko; and Okuda, Masanao, 3,775,758.
Fuji Photo Film Co.: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
Sato, Masamichi; and Takahashi, Isoji, 3,774,574.
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Takenobu, Mareo; Yoshida, Takashi; Masuda, Hiroshi; Takahashi, Kenya; Fujioka, Kenji; Miura, Kansuke; Shibasaki, Masuo; and Yamamoto, Tetsuo, 3,775,491.
Fujisawa, Kiyoji: *See—*
Hino, Tetsuo; Kozu, Isao; Hashiguchi, Susumu; Akamine, Takenori; Nishimura, Katsutoshi; Orita, Takao; Fujisawa, Kiyoji; and Nishiyana, Akio, 3,775,568.
Fujitsu Limited: *See—*
Akimaro, Haruo; Yamamoto, Koichi; Muroga, Ko; Shirasu, Hirotoshi; Araki, Noboru; and Nakajo, Toshihiko, 3,775,566.
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Funk, Clarence J.; Lemaire, Ivor P.; Sutton, Jerry L.; and Marrone, Frederick A., to United States of America, Navy. Apparatus for scanning an underwater area. 3,775,735, Cl. 340-4.00r.
Furnival, Thomas J., to General Motors Corporation. Method of mounting a piezoelectric device. 3,774,275, Cl. 29-25.350.
Gabriel, Malcolm Edward; and Anderson, David John, to International Standard Electric Corporation. Error correcting encoder. 3,775,747, Cl. 340-146.10r.
Gaertner, George W., Jr.: *See—*
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GAF Corporation: *See—*
Lach, Robert E.; and Baldwin, Jack A., 3,774,828.
Smith, Edward A., 3,774,769.
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Gainer, Gordon C.; and Luck, Russell M., to Westinghouse Electric Corporation. Solid insulation for electrical apparatus. 3,775,719, Cl. 336-58.000.
Gal, George: *See—*
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Gallagher, George A.; and Walter, Henry C., to Du Pont de Nemours, E. I., and Company. Composite article containing an alpha-olefin hydrocarbon copolymer. 3,775,158, Cl. 117-72.000.
Gamble, Elton S.; and Peterson, Warren S., to Olin Corporation. Non-ferrous refractory composition having improved resistance to molten non-ferrous metals and slags. 3,775,139, Cl. 106-57.000.
Ganger, Bertold; and Schuler, Roland, to Aktiengesellschaft Brown, Boveri & Cie. Method of and apparatus for voltage testing of high-voltage equipment and electrical machines. 3,775,686, Cl. 324-54.000.
Gaon, David E., to GTE Automatic Electric Laboratories Incorporated. Contact status sensing arrangement. 3,775,573, Cl. 179-175.230.
Garman, Lewayne E.; Kluythmans, Piet T.; and Vanbragt, Willy H., to CW Radiation, Inc. Gas laser. 3,775,700, Cl. 331-94.500.
Garner, Charles: *See—*
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Garrett Corporation, The: *See—*
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Garrett, David C.; and Reick, Harold W. Flashlight-continuity tester having plug and jack arrangement. 3,775,677, Cl. 324-53.000.
Garth, Emory Carl, to Texas Instruments, Incorporated. Synchronous digital system having a multispeed logic clock oscillator. 3,775,696, Cl. 331-57.000.
Garth, William, Jr.: *See—*
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Gartner, William Joseph, to Steiner, William R. and Franklin, Richard P., mesne. Portable space heater. 3,775,590, Cl. 219-366.000.
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Gas Developments Corporation, mesne: *See—*
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Gass, Edward W.; and Paramore, Fred W., to Halliburton Company. Fluid flow compensating method and system. 3,774,448, Cl. 73-231.00m.
Gasseling, Allen J. Kiln laying apparatus. 3,774,785, Cl. 214-17.0ca.
Gates, David S.: *See—*
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Gates, Robert B. Flexible harrow device. 3,774,694, Cl. 172-617.000.
Gaur, Jai P., to National Cash Register Company, The. Multi-line plasma shift register display. 3,775,764, Cl. 340-324.00r.
Gauthier, Oscar, to Dento Inc., mesne. False teeth cleaner. 3,774,256, Cl. 15-21.00r.
Gautreaux, Gloria A.: *See—*
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Gebhard, Albert W.: *See—*
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Gecan, Stephen John: *See—*
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Geck, Gunter; and Langhammer, Hans Jurgen, to Klockner-Werke AG. Apparatus for making steel from scrap metal. 3,775,544, Cl. 13-2.000.
Gedde, Erik, to American Can Company. Reinforced metal can end. 3,774,801, Cl. 220-66.000.
Geer, William W.: *See—*
Schone, Henry L.; Geer, William W.; Laxineta, Stephen C.; and Koistinen, Clayton W., 3,774,825.
Gefter, Semen Emilievich: *See—*
Nikiforov, Vladimir Pavlovich; Budkevich, Nikolai Pavlovich; Gefter, Semen Emilievich; Evdokimov, Svetozar Vladimirovich; Kil, Ilya Genrikhovich; Ryabov, Valentin Ignatievich; Smorodinov, Alexandr Nikolaevich; Tsybukov, Igo Kirillovich; and Tsyplakov, Anatly Mikhailovich, 3,775,280.
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Geistlich Ed Sohne AG fur Chemische Industrie: *See—*
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Gelardi, Joseph T., to American Technical Industries, Inc. Apparatus and method for making twisted wire products using intermittently fed fringe material. 3,774,653, Cl. 140-149.000.
Genaro, Joseph L., to Shur Brite Wax-O-Matic, Inc., mesne. Automatic surface polishing system. 3,774,259, Cl. 15-97.00r.
Gendreu, Robert, to Thomson-C&F. Landing aid system. 3,775,599, Cl. 235-150.220.
Gendreu, Robert; and Genuist, Jean, to Thomson-CSF. Independent landing monitoring pulse radar system. 3,775,766, Cl. 343-5.01s.
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Gentile, Ralph; and Calberg, Willis G., to Eastman Kodak Company. Splice tape handling mechanism. 3,775,224, Cl. 156-506.000.

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Georgiana, Joseph M.; Rolls, James A.; Voss, Donald R.; Mierzwa, Anthony M.; and Paradis, Robert A., to Diamond Shamrock Corporation. Rigid polyvinyl chloride resin powder composition for extrusion processes. 3,775,359, Cl. 260-23.70r.

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Gerson, Samuel L., to Restaurant Equipment Design Co. Slicing device. 3,774,490, Cl. 83-425.300.

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Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; and Singer, Paul A., to Cincinnati Time Recorder Company, Inc. Automatic fee determining system for parking garages. 3,775,593, Cl. 235-61.80a.

Gifford, Harry D., to Tidland Corporation. Mechanical variable torque chuck. 3,774,921, Cl. 279-2.000.

Gigiberia, Abesalom Petrovich: *See—*
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Gill, Frank A., 1/2 to Dowd, David C. Method for facing a single-faced corrugated web. 3,775,211, Cl. 156-205.000.

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Giovanni, Joseph. Trawl device. 3,774,334, Cl. 43-9.000.

Girling Limited: *See—*
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Gittinger, Norman C., to General Electric Company. Hybrid filter. 3,775,704, Cl. 333-11.000.

GKN Transmissions Limited: *See—*
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Glacier Metal Company Limited, The: *See—*
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Glanzstoff AG: *See—*
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Glasby, Alan Geoffrey Scruton, to Glasby Pharmaceuticals Limited. Reaction products of halogens and alkoxylated primary amines. 3,775,480, Cl. 260-584.00b.

Glasby Pharmaceuticals Limited: *See—*
Glasby, Alan Geoffrey Scruton, 3,775,480.

Glass, Benjamin Gordon. Vehicle parking systems and material handling and storage and mechanisms relating thereto. 3,774,784, Cl. 214-16.1ce.

Glass, James D.: *See—*
Corley, William P.; and Glass, James D., 3,775,553.

Glass, John P. Apparatus for making fibers. 3,775,061, Cl. 23-273.000.

Glass, Marvin, & Associates: *See—*
Barlow, Gordon A.; Kramer, Norman; Brand, Derek Albert; and Imat, Alexander, 3,774,340.
Glass, Marvin I.; and Breslow, Jeffrey D., 3,774,912.

Glass, Marvin I.; and Breslow, Jeffrey D., to Glass, Marvin, & Associates. Peg and ring apparatus including inclined ramp launching station. 3,774,912, Cl. 273-101.000.

Glaverbel S.A.: *See—*
Brichard, Claude, 3,775,080.

Glessner, James Stoy. Hand loom. 3,774,649, Cl. 139-33.000.

Global Marine Inc.: *See—*
Dean, James T., III, 3,774,562.

Global Marine Inc., mesne: *See—*
Koomey, Paul C., 3,775,736.

Glorisi, Frank J. Cooling system with selectively replaceable radiator sections. 3,774,678, Cl. 165-76.000.

Gloucester Engineering Co., Inc.: *See—*
Schott, Charles M., Jr., 3,775,225.

Godbersen, Byron Leroy. Boat trailer. 3,774,790, Cl. 214-84.000.

Godfrey, Arthur W.: *See—*
McCoy, Frederic C.; Godfrey, Arthur W.; and Reid, Robert E., 3,775,324.

Godsey, Frank W., to Bio-Medical Sciences, Inc. Temperature indicating composition. 3,774,450, Cl. 73-358.000.

Goetz, Gerald F. Integrated nozzle. 3,774,868, Cl. 244-53.00r.

Goldberg, Edward M.: *See—*
Bazell, Seymour; Ostensen, Ralph G.; and Goldberg, Edward M., 3,775,606.

Goldberg, Herbert E., to American Optical Corporation. Source testing cardiac pacer with source-independent rate circuitry and disabling means therefor. 3,774,619, Cl. 128-419.00p.

Goldberg, Jacob, to United States Scientific Instruments, Inc. Method of and apparatus for flash discharge. 3,775,641, Cl. 315-261.000.

Goldhor, Richard S.: *See—*
Ebeling, Frederick A.; Johnson, Roger L.; and Goldhor, Richard S., 3,775,560.

Goldsworthy Engineering, Inc.: *See—*
Karlson, Harald E.; and Hardesty, Ethridge E., 3,775,219.

Golsch, Rudolf A. M., to Signode Corporation. Fastener driving tool. 3,774,293, Cl. 29-432.100.

Gomes, John M.; and Uchida, Kenji, to United States of America, Interior. Electrolytic preparation of titanium and zirconium diborides using a molten, sodium salt electrolyte. 3,775,271, Cl. 204-71.000.

Gomory, Paul L., to Phillips Petroleum Company. Securing an extrudate into a base material. 3,775,232, Cl. 161-62.000.

Good, Paul F., to Speedco, Inc. Mixing gland for stuffing meat dough. 3,774,266, Cl. 17-41.000.

Goodman, Earl H. Pipe tight all. 3,774,481, Cl. 81-57.013.

Goodren Products Corporation: *See—*
Tanney, Oliver Morley, 3,774,328.

Goodrich, B. F., Company, The: *See—*
Csontos, Alan A., 3,775,276.
Reinhart, Norman E.; and Mullender, Claude, 3,775,221.
Sacrini, Egeo; and Cavallotti, Claudio, 3,775,465.

Goodwin, Vernon L., to Brush Wellman Inc. Method of fabricating a beryllium-titanium composite. 3,774,290, Cl. 29-420.500.

Gorg, Otto: *See—*
Merke, Ernst; Gorg, Otto; and Grupp, Joachim, 3,775,731.

Gorin, Georges J., to LFE Corporation. Gas reaction apparatus. 3,775,621, Cl. 250-531.000.

Gorman-Rupp Company, The: *See—*
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Gorsich, Richard D.: *See—*
Tuvell, Melvin E.; Yancey, Charlie F.; and Gorsich, Richard D., 3,775,349.

Gorta, Omkarnath P.: *See—*
Antonatti, Vincent W.; Gorta, Omkarnath P.; and Moran, Kevin P., 3,774,677.

Goto, Tomio: *See—*
Yamaguchi, Tadashi; and Goto, Tomio, 3,775,515.

Gouirand, Rene, to Mercadante, Joseph. Combined vehicle chassis and air suspension system. 3,774,948, Cl. 293-68.000.

Gould Inc.: *See—*
Jaggard, Arthur M., 3,775,189.

Gould, Robert R., Jr., to General Motors Corporation. Oven heater element control circuit. 3,775,591, Cl. 219-501.000.

Grace, W. R., & Co.: *See—*
Vaughan, David E. W.; Maher, Philip K.; and Albers, Edwin W., 3,775,345.

Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., to Itek Corporation. Photosensitive silver halide layers and process. 3,775,114, Cl. 96-33.000.

Graf, Carlton Eugene; Skogsholm, Einar Aasen; and Tracy, John Gaylor, to General Electric Company. Power system overcurrent protection means utilizing voltage adjustment. 3,775,651, Cl. 318-227.000.

Graff, Kenneth W., to ICI America Inc. Surfactants for solvent/water systems and textile treating compositions. 3,775,051, Cl. 8-115.600.

Graham, Clyde B.: *See—*
Mitchner, Joseph L.; Keller, Robert A.; and Graham, Clyde B., 3,774,899.

Granberg, Donald R., to Koehring Company. Live axle drive system. 3,774,709, Cl. 180-53.0wa.

Grand Haven Stamped Products Company: *See—*
Bruhn, Max R. C., Jr., 3,774,469.

Grapengiesser, Johann-Claus; Klein-Albenhausen, Heinrich; Van Hees, Adrian; and Siefert, Gerhard, to Peters, Claudius, A.G. Pneumatic conveyer chute. 3,774,972, Cl. 302-29.000.

Gray Manufacturing Company, Inc.: *See—*
Craft, Roger L., 3,775,027.

Gray, Samuel A. Push-pull linear motor. 3,774,642, Cl. 137-625.650.

Graybeal, Michael Robin, to Champion Corporation. Power rodder construction. 3,774,827, Cl. 226-50.000.

Green, Allen T.; and Tetelman, Alan S., to Becton, Dickinson Electronics Company, mesne. Acoustic emission damage measurement. 3,774,443, Cl. 73-67.300.

Green, Joseph: *See—*
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Greenberg, Allen A., to General Mills Firm Group, Inc. Balance toy. 3,774,908, Cl. 273-1.00r.

Greenberg, Hoyne E.; and Wexler, Max L., to Hoyne Industries, Inc. Mirrored picture. 3,775,153, Cl. 117-35.00r.

Greenwald, Charles, to International Telephone and Telegraph Corporation. Signal-to-noise ratio measuring system for frequency modulated communication systems. 3,775,689, Cl. 325-363.000.

Greer Products, Inc.: *See*—
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Greer, Walter D.; and Schlicht, Richard C., to Greer Products, Inc. Metal forming. 3,774,430, Cl. 72-60.000.

Grego, Peter; and Panzarino, Joseph N., to Corning Glass Works. Decorating glass-ceramic materials. 3,775,154, Cl. 117-38.000.

Gregory, Jerome P. Valve assembly. 3,774,881, Cl. 251-335.000.

Greppi, Pierluigi. Modular sanitary fixture. 3,774,245, Cl. 4-167.000.

Gress, Richard D. Safety receptacle. 3,775,726, Cl. 339-14.00r.

Greth, Frich, to Lonza Ltd. Process for the production of alkoxy acetoacetic acid esters. 3,775,467, Cl. 260-483.000.

Greune, Christian; and Maier, Karl, to Motoren- und Turbinen-Union Munchen GmbH. Control system for gas turbine engines. 3,774,395, Cl. 60-39.16r.

Grigoleit, Harry; and Kunzli, Max, to Aktiengesellschaft Brown, Boveri & Cie. Method of applying protective films to plastic surfaces through an intermediate structure. 3,775,208, Cl. 156-178.000.

Grossmann, Max; List, Karl-Hermann; and Ohrig, Heinz. Disperse dyes and sulfosuccinate semi esters of polyalkylene glyol ethers of alkylphenols or phenol-formaldehyde condensates. 3,775,056, Cl. 8-169.000.

Grout, Kenneth M.; and Devellian, Richard D., to Kenics Corporation. Interactive surface mixer. 3,775,063, Cl. 23-283.000.

Grupp, Joachim: *See*—
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GTE Automatic Electric Laboratories Incorporated: *See*—
Gaon, David E., 3,775,573.
Norman, Scott L., 3,775,111.

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Guardian Electric Manufacturing Company: *See*—
Metzler, Albert; Wright, William W.; Howell, John J.; and Collette, Richard L., 3,774,728.

Guary, Gabriel. Mixer seal. 3,774,889, Cl. 259-108.000.

Guckel, Henry, to Wisconsin Alumni Research Foundation. Wideband transmission line directional coupler. 3,775,561, Cl. 178-58.00r.

Gudelis, David A.: *See*—
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Guenther, Karl R.: *See*—
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Guenther, Karl Russell: *See*—
Paquette, Elmer Gordon; and Guenther, Karl Russell, 3,775,210.

Guhr, Gisela; von Mikusch-Buchberg, Johannes Donatus; Heinrich, Wolfgang; Bandzauner, Arnold; and D'Audiffret, Yves Tollard, to Lever Brothers Company. Gel-forming monoglycerides of cyclic carboxylic acids. 3,775,448, Cl. 260-410.700.

Guidotti, Ronald A.; and Kleespies, Ernst K., to United States of America, Interior. Production of niobium and tantalum. 3,775,096, Cl. 75-84.000.

Guisinger, John E.: *See*—
Lewicki, George W.; and Guisinger, John E., 3,775,570.

Gulf & Western Industries Inc.: *See*—
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Gulf Oil Canada Limited: *See*—
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Gulf Research & Development Company: *See*—
Barie, Walter P., Jr., 3,775,384.
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Ellis, Alan F.; and Sabourin, Edward T., 3,775,509.
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McKinney, Joel D.; and Paraskos, John A., 3,775,305.
Ondrey, John A.; and Swift, Harold E., 3,775,343.

Gulf Research and Development Company: *See*—
Kinsel, Norma A.; and Leathen, William W., 3,775,252.

Gulyas, James W.; and O'Kane, Patrick T., to Sherritt Gordon Mines Limited. Removal of dust particles from a dust laden stream of gases exiting from a multiple hearth furnace and reinjection of dust particles into the furnace. 3,775,095, Cl. 75-82.000.

Gurev, Harold S.: *See*—
Black, James R.; and Gurev, Harold S., 3,775,120.

Gustavsson, Bengt Henrik, to Saab-Scania Aktiebolag. Sound-proofing installation system for vehicle power units. 3,774,710, Cl. 180-54.00a.

Gustavsson, Karl Axel Goran, to AB Bahco. Particle sampling devices. 3,774,442, Cl. 73-28.000.

Gyongyos, Ivan, to Prolizenz AG. Caterpillar-type mold with nozzle having self-lubricating insert means. 3,774,670, Cl. 164-279.000.

Habermeier, Juergen; and Porret, Daniel, to Ciba-Geigy AG. Polyisocyanates containing hydantoin groups. 3,775,427, Cl. 260-309.500.

Hadjisky, John, to Stoyanova, Joann. Magnetic assembly having latching means storing energy to produce useful work. 3,775,716, Cl. 335-253.000.

Haga, Mikio: *See*—
Inami, Akira; Shida, Sankichi; Haga, Mikio; and Kariya, Kotaro, 3,775,317.

Hagener, James L.: *See*—
Church, Herman S.; and Hagener, James L., 3,774,951.

Hagiwara, Shoji: *See*—
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Hahn & Clay: *See*—
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Hahn, Helmut: *See*—
Schmalfeld, Paul; Hahn, Helmut; Lehmann, Joachim; and Kleisa, Kurt, 3,774,315.

Haines, Ronald L.; Henderson, Ian H.S.; and Sievenpiper, Franklin, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Electrolytic process for forming cadmium electrodes. 3,775,273, Cl. 204-115.000.

Hakata, Hiroshi; Higuchi, Katumi; and Kozeni, Masao, to Shionogi & Co., Ltd. Method of and apparatus for sleep monitoring by brainwave, electromyographic and eye movement signals. 3,774,593, Cl. 128-2.10b.

Halasa, Adel F.: *See*—
Cheng, Tai Chun; and Halasa, Adel F., 3,775,392.

Hale, Jesse R. Structural membrane panel formed from saddle shaped surface. 3,774,358, Cl. 52-81.000.

Haley, Harold A., to FMC Corporation. Method and apparatus for making oriented tubular film. 3,775,523, Cl. 264-89.000.

Haley, Thomas E.: *See*—
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Haller, Philip L.: *See*—
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Smith, Dwight K.; and Lane, Carl A., 3,774,683.

Hamb, Frederick L.: *See*—
Jacoby, Frederick J.; Hamb, Frederick L.; and Trent, Lewis C., 3,775,152.

Hamilton, Frank Alexander; and Calcott, Thomas George, to Commonwealth Steel Company Limited. Ball mills with superellipsoidal balls. 3,774,856, Cl. 241-176.000.

Hammann, Ingeborg: *See*—
Riebel, Hans-Jochem; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,775,517.

Hammann, Paul E., to American Air Filter Company, Inc. Door or panel latch assembly. 3,774,946, Cl. 292-64.000.

Hanke, Hans: *See*—
Forster, Hans-Joachim M.; Zaiser, Wolfgang; Hanke, Hans; and Bultmann, Friedrich, 3,774,734.

Hanke, Hans; and Peter, Wolfgang, to Daimler-Benz Aktiengesellschaft. Hydrodynamic retarder for vehicles. 3,774,735, Cl. 188-296.000.

Hans, Daniel, to Area Conditioner Corporation. Portable air cooler and dehumidifier. 3,774,410, Cl. 62-426.000.

Hansen, Gunnar Lyshoj, to Danfoss A/S. Rotary fluid pressure device. 3,775,031, Cl. 418-61.000.

Hansen, Robert L.; and Roshon, Clyde C., to International Business Machines Corporation. Print chain assembly for high speed printer. 3,774,531, Cl. 101-93.00c.

Hansjurgens, Achim, to Deutsche Nemectron Gesellschaft m.b.H. Electromedicinal apparatus for interference current therapy. 3,774,620, Cl. 128-420.000.

Hansson, Margaret S.; Cunningham, Gerald A.; and Gebhard, Albert W., to Gerico, Inc. Releasable connecting bar for child carrier. 3,774,824, Cl. 224-6.000.

Harada, Kenzo: *See*—
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Harak, Gerhard; Hubert, Heinrich; and Kuhnert, Hans, to Heidelberger Druckmaschinen Aktiengesellschaft. Centering spindle for taking up tool shafts. 3,774,928, Cl. 279-22.000.

Hardesty, Ethridge E.: *See*—
Karlson, Harald E.; and Hardesty, Ethridge E., 3,775,219.

Hare, Gerald E.; Thompson, Norman W.; and Tanaka, Masahisa, to Atomic Energy of Canada Limited Commerical Products. Method for the production of semiconductor thermoelements. 3,775,218, Cl. 156-331.000.

Harmon, Emerson R., to Amalga Corporation, mesne. Producing a filament wound fuseholder. 3,775,207, Cl. 156-173.000.

Harmon, Kenneth N. Combined throttle spoiler actuator for aircraft. 3,774,869, Cl. 244-83.00r.

Harnden, John D., Jr., to General Electric Company. Contact-less initiation of light emission from photo lamps synchronized with camera operation. 3,774,511, Cl. 95-11.50r.

Harnden, Michael Raymond, to Beecham Group Limited. N-Oxide of double stranded RHR. 3,775,398, Cl. 260-211.50r.

Harnden, Michael Raymond, to Beecham Group Limited. N-Oxide of poly I: poly C. 3,775,399, Cl. 260-211.50r.

Harnisch, Horst, to Bayer Aktiengesellschaft. Basic azoloindoline dyestuffs. 3,775,407, Cl. 260-240.100.

Harper, James E. Non-ferrous lithographic printing plate glassing composition. 3,775,135, Cl. 106-2.000.

Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., to United States of America, Agriculture. Process for producing varicolored fabrics via the selective dyeing of cellulosic fabrics with different dye types. 3,775,046,Cl. 8-17.000.

Harris, Marvin W., to Scorpion, Inc. Snowmobile track with friction reducing means. 3,774,979, Cl. 305-24.000.

Harris, Stewart G.; and Bazelmans, Joseph B., to Hers Management Corporation. Protective envelope for phonograph record. 3,774,757, Cl. 206-62.00p.

Harrold, Ronald T.; and Long, Charles A., to Westinghouse Electric Corporation. Methods for locating partial discharges in electrical apparatus. 3,775,676, Cl. 324-52.000.

Harsanyi, Kalman; Nador, Karoly; Takacs, Kalman; Korbonits, Dezso; Kiss, Pal; Simay, Antal; Bodrogi, Istvan; Tardos, Laszlo; and Leszkovszky, Gyorgy, to Chinoin Gyodyszer-es Vegyeszeti Termekek Gyara Rt. 1,3-Thiazines. 3,775,409, Cl. 260-243.00r.

Hartenstein, Josef: *See—*
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Hartley, Cavour: *See—*
Cole, George S.; and Ritzenthaler, Richard L., 3,774,643.

Hartley, Guilford: *See—*
Cole, George S.; and Ritzenthaler, Richard L., 3,774,643.

Hartman, David A., to Cities Service Oil Company. Oil composition with anti-corrosion properties. 3,775,319, Cl. 252-334.000.

Hartman, Peter W.: *See—*
Crimmins, James W.; and Hartman, Peter W., 3,775,562.

Hartman, William R.; and Lagonegro, Paul R., to Xerox Corporation. Apparatus for optical color separation imaging. 3,775,006, Cl. 355-4.000.

Hartridge, Leslie, Limited: *See—*
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Hartz, Thomas Jayes, to National Can Corporation. Method of sealing container seams. 3,774,560, Cl. 113-120.00y.

Haruna, Takashi: *See—*
Usui, Keizaburo; and Haruna, Takashi, 3,774,714.

Harvey, George Arthur. Endless band conveyors. 3,774,752, Cl. 198-195.000.

Harvey Plant Holdings, Limited: *See—*
Mosley, David Roy, 3,774,698.

Harvey, Richard Deane, to Heckinger and Associates, Inc. Structural building module. 3,775,240, Cl. 161-149.000.

Hasegawa, Kensuke: *See—*
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Hasell, Richard F.; Boyce, Walter A.; and Smith, Chrisman O., to Westinghouse Electric Corporation. Electric lamp having a base assembly with integral means for axially orienting the end contact. 3,775,634, Cl. 313-318.000.

Haselman, Bruce B.: *See—*
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Hashiguchi, Susumu: *See—*
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Hatakeyama, Yoshio: *See—*
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Hatano, Isao; and Nagano, Akira, to Omron Tateisi Electronics Co. Arithmetic system for use in electronic calculator. 3,775,601, Cl. 235-156.000.

Hatstat, Robert Gordon: *See—*
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Hauni-Werke Korber & Co., KG: *See—*
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Hauser, Erhard, to Arthur Vakuumtechnik Pfeiffer GmbH. Device for mixing and casting. 3,774,886, Cl. 259-4.000.

Hauser, Raimund: *See—*
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Hausslein, Robert W.; and McCollum, Hugh E., to Amicon Corporation. Wet strength resins and process for making same from unsaturated diacid anhydride, polyalkylene polyamine, alkylene diamine, saturated aliphatic diacid and epichlorohydrin. 3,775,379, Cl. 60-78.0sc.

Hayama, Shigeru; and Niino, Shogo. Process for making a semiconductor element. 3,775,177, Cl. 117-230.000.

Hayashi, Hideo; Sato, Hisatake; and Mizuno, Yusaku, to Nippon Oil Company Limited. Process for preparing a modified petroleum resin for use in gravure ink. 3,775,381, Cl. 260-78.40d.

Hayashi, Isao: *See—*
Ikeda, Katsushige; Hayashi, Isao; Katok, Takashi; Takahashi, Toshiro; Nagano, Toshihiro; and Wada, Kenji, 3,775,266.

Hayashi, Kunihisa: *See—*
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Hayden, James W.: *See—*
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Hayden, Kenneth F., to Mobil Oil Corporation. Solvent removal of phenols from catalytic gasoline and solvent recovery. 3,775,306, Cl. 208-263.000.

Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with a catalytic composite of platinum iron and germanium. 3,775,300, Cl. 208-139.000.

Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with a trimetallic catalytic composite. 3,775,301, Cl. 208-139.000.

Hayes, Richard H.: *See—*
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Hazard, Robert E., to Polytop Corporation. Dispensing closure with initial breakable disc seal. 3,774,822, Cl. 222-541.000.

Healey Mouldings Limited: *See—*
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Heard, Bruce A.: *See—*
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Hearn, Lerma L. E., to Fram Corporation. Trace oil analysis. 3,775,059, Cl. 23-230.0hc.

Heaton, Richard A., to Owens-Illinois, Inc. Pressurizer apparatus for glass ribbon machine. 3,775,084, Cl. 65-264.000.

Heck, Peter: *See—*
Chovanec, William; and Heck, Peter, 3,774,985.

Heckinger and Associates, Inc.: *See—*
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Heckler & Koch GmbH: *See—*
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Hedco, Inc.: *See—*
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Hedlund, Junior M. Material handling apparatus. 3,774,754, Cl. 198-224.000.

Heer, Heribert; Kantelhardt, Werner; and Kritzler, Gerhard, to Apparatebau Rothemuhle Brandt & Kritzler. Connection of discharge electrodes. 3,774,372, Cl. 55-146.000.

Heeren, Vernon L.; Howell, James M.; and Reis, C. Dale, to Raytheon Company. Phased array system. 3,775,769, Cl. 343-100.30a.

Hege, Bonita P.: *See—*
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Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
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Heimlinger, Hans K.: *See—*
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Heinrich, Wilhelm Ludwig: *See—*
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Heinrich, Wolfgang: *See—*
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Heins, Arnold; Kuhling, Dieter; and Bloching, Helmut, to Henkel & Cie G.m.b.H. Method of activating per-compounds and solid activated per-compound compositions. 3,775,332, Cl. 252-95.000.

Heintz, Richard Paul, to Pneumo Dynamics Corporation. Authority change mechanism. 3,774,463, Cl. 74-96.000.

Heinzer, Hans, to SIG Schweizerische Industrie Gesellschaft. Device for making bags. 3,774,509, Cl. 93-18.000.

Heisterberg, Milton W., to General American Transportation Corporation. Sectional floating roof and method of forming same. 3,774,799, Cl. 220-26.00r.

Helland, Howard M.: *See—*
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Heller, Siegbert, to Siemens Aktiengesellschaft. Switching arrangement for conference call connections in private branch telephone exchanges. 3,775,564, Cl. 179-18.00b.

Henderson, Ian H.S.: *See—*
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Henderson, Martin C.: *See—*
Koerner, Ralph J.; Higbee, John E.; and Henderson, Martin C., 3,775,742.

Hendrickson, William W., to UMC Industries, Inc. Changeable verification check-controlled vending. 3,774,743, Cl. 194-4.00c.

Hendriks, Mathieu J. M.; and Crommentuyn, Gerardus J., to Oce-van der Grinten N.V. Diazonium compounds and diazotype materials containing them. 3,775,131, Cl. 96-91.00r.

Henkel & Cie G.m.b.H.: *See—*
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Henning, Steven A. Straw-forming structure for a beverage container. 3,774,804, Cl. 220-90.200.

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Hensler, Donald Henry; Ross, Alexander Robert; Steidel, Charles Archibald; Trudel, Murray Lawrence; and Zuber, Theodore Wallace, Jr., to Bell Telephone Laboratories, Incorporated. Technique for the fabrication of thin film resistors. 3,775,278, Cl. 204-192000.

Henss, Heinrich; Maschke, Edgar; and Wirbel, Bernd, to VDO Tachometer Werke Adolf Schindling GmbH. Tachometer with a distance counter. 3,774,457, Cl. 73-490.000.

Hepner, Leonard S., to Mobil Oil Corporation. Catalyst cracking with catalyst of zeolite in weighted matrix. 3,775,299, Cl. 208-120.000.

Herbold, Werner R., to Blance & Co. Article of manufacture and manufacturing of such article. 3,774,561, Cl. 113-120.00b.

Herbst, David R.; and Smith, Herchel, to American Home Products Corporation. N-Oxides of indole fused heterocyclic compounds. 3,775,420, Cl. 260-293.530.

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Irwin, Philip G.; McNaughtan, Thomas J.; and Patellis, Anargiros Pete, 3,775,335.

Hermann, David Trimble; and Remley, Kenneth Herald, to American Cyanamid Company. Textile adhesive. 3,775,205, Cl. 156-72.000.

Hermes, Matthew Edward, to Du Pont de Nemours, E. I., and Company. Article coated with composition of polysilicic acid and silylfluorolefin. 3,775,171, Cl. 117-138.80f.

Herrick, Richard. Water driven vehicle. 3,774,848, Cl. 239-191.000.

Hers Management Corporation: *See*—
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Hertzog, William Frederick: *See*—
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Hetchler, Neal F., to Schlitz, Jos., Brewing Company. Combining conveyor arrangement for articles such as cans. 3,774,747, Cl. 198-32.000.

Heuer, Hans, to Anker-Werke AG. Electromagnetic drive for data indication. 3,775,714, Cl. 335-230.000.

Heun, Arnold: *See*—
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Hewertson, Warren; and Taylor, Ian Charles, to Imperial Chemical Industries Limited. Preparation of tertiary phosphines. 3,775,482, Cl. 260-606.50p.

Hewlings, Winston G. Pneumatic level control. 3,775,026, Cl. 417-36.000.

Heyerdahl, Norman E., to National Cash Register Company, The. Method of making insulated gate field effect transistor. 3,775,262, Cl. 204-15.000.

Hidding, Walter E.: *See*—
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Hidding, Walter E.; Rocker, Hermann; and Beck, Hugo, said Rocker and Said Beck assors. to said Hidding, Walter E. Handle attaching machine. 3,774,285, Cl. 29-208.00c.

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Higgins, Irwin R., to Small Business Investment Company of New York, mesne. Process for treating fertilizer plant waste streams. 3,775,088, Cl. 71-1.000.

Higochi, Hideo, to Nippondenso Co., Ltd. Magnetic clutch. 3,774,739, Cl. 192-84.00c.

Higuchi, Katumi: *See*—
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Hijikata, Hiroshi, to Shizuoka Match Co., Ltd. Chemical composition for combustible tip used for friction matches and method for manufacturing same. 3,775,198, Cl. 149-18.000.

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Hindell, Sidney E., to Diagnostic Instruments, Inc. Powder cloud generator and method. 3,774,573, Cl. 118-629.000.

Hindersinn, Raymond R., to Hooker Chemical Corporation. Flame retardant polymer compositions containing perchlorofulvalene. 3,775,516, Cl. 260-880.00r.

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Hinohara, Yoshikazu: *See*—
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Hiraia, Masaru; Kunioka, Kazuo; Shimotsuma, Teruo; and Shimizu, Shigenari. Method for descaling steel. 3,775,180, Cl. 134-7.000.

Hirn, Helmut; and Bott, Wolfgang, to RILCO Maschinenfabrik GmbH & Co. KG. Ball valve. 3,774,640, Cl. 137-625.480.

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Hoffman, Herbert; Rosshaupter, Erich; and Weitze, Arthur, to Siemens Aktiengesellschaft. Process for selective metallization of insulating material bodies. 3,775,117, Cl. 96-36.200.

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Holland, John H., to Arkansas Rock and Gravel Co. Rocking bolster. 3,774,942, Cl. 280-440.000.

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Holm, Roy T.; Morris, Rupert C.; and Hayden, James W., to Shell Oil Company. Telomer products. 3,775,475, Cl. 260-535.00p.

Holmberg, Gote Eskil Yngve, to G.E.Y.-Patenter Aktiebolag. Push-button lock for safety belts. 3,774,268, Cl. 24-230.00a.

Holst, Edward H.: *See*—
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Howard, Henry H. Apparatus for fry potato sugar leaching and the like. 3,774,524, Cl. 99-483.000.
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Ichinose, Shiro. Rotary screen printing machine with internal squeegee. 3,774,533, Cl. 101-119.000.
Ichinose, Shiro. Rotary screen printing machine. 3,774,534, Cl. 101-119.000.
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Ikeda, Katsushige; Hayashi, Isao; Katok, Takashi; Takahashi, Toshiro; Nagano, Toshihiro; and Wada, Kenji, to Kuboko Paint Company, Limited and Riken Lightmetal Industry Company, Limited. Process for forming resinous films on anodized aluminum substrates. 3775,266, Cl. 204-38.00e.
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Anderson, A. D.; Lauridsen, Walter E.; and Overstreet, Charles L., 3,774,265.

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Isaacson, Max, to Vibrodyne, Inc. Vibratory apparatus. 3,774,888, Cl. 259-72.000.

Isbitsky, Bernard, Jr.; Solomon, Jack M.; and Bluestein, Bernard R., to Witco Chemical Company, Inc. Process for preparing phenol. 3,775,487, Cl. 260-621.00h.

Ise Electronics Corporation: *See—*
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Ishibashi, Hisanori; Mimachi, Motomu; and Iwata, Masahisa, to Sony Corporation. Condenser microphone. 3,775,572, Cl. 179-111.00r.

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Ito, Shin; and Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic controls for transmission with brake priority valve. 3,774,736, Cl. 192-4.00a.

Ito, Teruyuki, to Toyoda Koki Kabushiki Kaisha. Two-step automatic feed system for a machine tool. 3,774,483, Cl. 82-34.00b.

Ito, Yoichiro; and Bowman, Robert L., to United States of America, Department of Health, Education and Welfare. Countercurrent chromatography with flow-through coil planet centrifuge. 3,775,309, Cl. 210-31.00c.

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Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, to Eisenwerk-Gesellschaft Maximilianshutte m.b.H. Steel making converter. 3,774,893, Cl. 266-35.000.

Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg. Method and converter for refining pig iron. 3,774,894, Cl. 266-35.000.

Kobayashi, Akihiro; and Yokota, Akira, to Nittan Company, Limited. Fire detecting system with spurious signal rejection. 3,775,761, Cl. 340-228.00r.

Kobayashi, Isamu: *See—*
Wakamiya, Kinji; and Kobayashi, Isamu, 3,775,196.

Kobayashi, Seihin; Torii, Michihiro; Jojima, Takehiko; and Okuda, Masanao, to Fuji Electrochemical Co., Ltd. Magnetic thin film plated wire memory. 3,775,758, Cl. 340-174.0va.

Kober, Frederick P., to Chem-E-Watt Corporation, mesne. Self-contained electrochemical heat source. 3,774,589, Cl. 126-263.000.

Koch Adler AG: *See*—
Scholl, Hans; and Fischer, Jochen, 3,774,558.

Kock, Hendrikus Gerardus: *See*—
De Nobel, Dirk; and Kock, Hendrikus Gerardus, 3,775,200.

Koehring Company: *See*—
Granberg, Donald R., 3,774,709.

Koenig, Karl-Heinz: *See*—
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, 3,775,463.

Koerner, Ralph J.; Higbee, John E.; and Henderson, Martin C., to Canoga Controls Corporation. Vehicle detection system. 3,775,742, Cl. 340-38.001.

Koh, Chew Seng. Inductive components. 3,775,721, Cl. 336-160.000.

Kohne, Harry F., Jr.; and Kurrle, Frederick L., to Westvaco Corporation. Blushed polystyrene pigment. 3,775,353, Cl. 260-2.50b.

Kohnert, Hans, to Heidelberger Druckmaschinen Aktiengesellschaft. Clamping assembly or jig for machine tools, machining centers and transfer routes. 3,774,900, Cl. 269-95.000.

Koistinen, Clayton W.: *See*—
Schone, Henry L.; Geer, William W.; Laxineta, Stephen C.; and Koistinen, Clayton W., 3,774,825.

Koiwai, Yoshihisa: *See*—
Kubo, Junichi; and Koiwai, Yoshihisa, 3,775,302.

Kokawa, Tomoo, to Kansai Paint Co., Ltd. Composition for preparing resin coating film and the like. 3,775,377, Cl. 260-77.5cr.

Kollonitsch, Janos: *See*—
Jensen, Norman P.; Kollonitsch, Janos; and Shen, Tsung-Ying, 3,775,444.

Kolomitsky, Fedor Mifodievich: *See*—
Brusakov, Jury Ivanovich; Livshits, Irma Solomonovna; Kiselev, Vasily Pavlovich; Cheltsov, Vasily Mikhailovich; Avdeev, Mikhail Pavlovich; Marin, Semen Panteleevich; Alivoivodich, Miro Khristoforovich; Kulikov, Alexei Kuzmich; Berezhnoi, Ivan Arkhipovich; olpin, Pavel Ilich; Chernyakhovsky, Leonid Vladimirovich; Eltsova, Zoya Vasilievna; Medvedeva, Lidia Nikolaevna; and Kolomitsky, Fedor Mifodievich, 3,775,092.

KOMET Stahlhatter- und Werkzeugfabrik Robert Breuning GmbH: *See*—
Eckle, Otto, 3,774,276.

Komoda, Tsutomu: *See*—
Minamikawa, Yoshihisa; and Komoda, Tsutomu, 3,775,630.

Konig, Fritz; and Wascewski, Hans-Georg, to Losenhausen Maschinenbau AG. Dynamic soil compacting machine. 3,775,019, Cl. 404-133.000.

Konig, Gustav. Process of manufacturing foamed bodies of plastics material. 3,775,206, Cl. 156-78.000.

Konig, Reinhard, to U.S. Philips Corporation, mesne. Cutter head for dry-shavers. 3,774,300, Cl. 30-34.100.

Koninklijke Nederlandsche Hoogovens Staalfabricken N.V.: *See*—
Visser, Reier; Bormans, Jozef Marie Jacobus; Van Haaren, Wilhelmus Petrus Josephus; and Homan, Douwe Meindert, 3,775,140.

Konrad, Leonard J., to American Electronic Laboratories, Inc. Frequency measuring means. 3,775,681, Cl. 324-78.00r.

Koomey, Paul C., to Global Marine Inc., mesne. Acoustical underwater control apparatus. 3,775,736, Cl. 340-5.00r.

Kopecek, Jindrich: *See*—
Lim, Drahoslav; Sprincl, Ladislav; and Kopecek, Jindrich, 3,774,615.

Koppers Company, Inc.: *See*—
Mruk, Norbert J., 3,775,473.

Korbonits, Dezso: *See*—
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Koris, Arthur: *See*—
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Korstad, Ralph J.: *See*—
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Koster, Wolfgang; and Jentzsch, Harald, to Stork Amsterdam N.V. Apparatus for the conveying through a path and for recirculating said rods. 3,774,830, Cl. 226-107.000.

Kott, Michael A., to AAI Corporation. Filter arrangement. 3,774,997, Cl. 350-314.000.

Kotzar, Nick, to ILC Industries, Inc. Visor assembly having replaceable face. 3,774,239, Cl. 2-10.000.

Kovacsik, Georges: *See*—
Courtois, Andre; Lacombe, Yves; Laporte, Jean; and Kovacsik, Georges, 3,775,060.

Koyama, Mitsuo: *See*—
Kitai, Kiyoshi; Koyama, Mitsuo; Kato, Shogo; Takazawa, Yuzuru; and Nagaoka, Shinji, 3,774,458.

Koyangi, Shunichi; Ogawa, Kinya; and Taguchi, Kenichi, to Shinetsu Chemical Company. Method for preparing azobisvaleronitriles. 3,775,395, Cl. 260-192.000.

Kozeni, Masao: *See*—
Hakata, Hiroshi; Higuchi, Katumi; and Kozeni, Masao, 3,774,593.

Kozlenkov, Alexandr Ivanovich: *See*—
Borovsky, Igor Borisovich; Kozlenkov, Alexandr Ivanovich; and Bogdanov, Vladimir Grigorievich, 3,775,611.

Kozu, Isao: *See*—
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Kozu, Isao; Kurihara, Hidetoshi; and Hino, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Automatic cassette changer. 3,774,915, Cl. 274-4.00f.

Kramer, Norman: *See*—
Barlow, Gordon A.; Kramer, Norman; Brand, Derek Albert; and Imat, Alexander, 3,774,340.

Krammer, Robert, to Seatech Engineering, Inc. Conveyor apparatus. 3,774,546, Cl. 104-172.500.

Krehbiel, Delmar D.: *See*—
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Kreitz, Walter: *See*—
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Kreuzer, Dieter, to Fichtel & Sachs AG. Sealed bearing arrangement. 3,774,919, Cl. 277-165.000.

Kriett, Walter, to Blohm & Voss AG. Multichannel slide valve. 3,774,638, Cl. 137-625.480.

Kritzler, Gerhard: *See*—
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Krob, Erwin; and Valoh, Alfons, to Vockenuber, Karl and Hauser, Raimund. Claw device. 3,775,000, Cl. 352-79.000.

Krogsrud, Jens, to JAC, Jacobsen A/S. Equipoised arm assembly. 3,774,873, Cl. 248-280.000.

Kronig, Walter; and Scharfe, Gerhard, to Bayer Aktiengesellschaft. Process for the production of catalysts for making vinyl esters. 3,775,342, Cl. 252-430.000.

Kruckenberg, Winfried: *See*—
Wolfrum, Gerhard; Neeff, Rutger; and Kruckenberg, Winfried, 3,775,049.

Kubo, Hiroshi: *See*—
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Kubo, Junichi; and Koiwai, Yoshihisa, to Industrial Science and Technology, Agency of. Prevention of efflux of hydro-desulfurization catalyst particles. 3,775,302, Cl. 208-157.000.

Kuboko Paint Company, Limited: *See*—
Ikeda, Katsushige; Hayashi, Isao; Katok, Takashi; Takahashi, Toshiro; Nagano, Toshihiro; and Wada, Kenji, 3,775,266.

Kubota, Ichiro, to Kabushiki Kaisha Komatsu Seisakusho. Interlocking device for presses and transferfeeders. 3,774,740, Cl. 192-150.000.

Kubota, Tomio: *See*—
Enomoto, Takamiti; Kawanishi, Toshiyuki; Yasumori, Akiyoshi; Shiga, Tsuyoshi; Hirosawa, Yujiro; and Kubota, Tomio, 3,775,130.

Kuck, Lloyd L., to General Motors Corporation. Insert for setting armature shaft end position. 3,774,981, Cl. 308-166.000.

Kuenzel, Rainer. Tool for inserting and removing parts in mechanical assemblages. 3,774,288, Cl. 29-282.000.

Kuhl, Dieter; and Poppa, Hubert, to Siemens Aktiengesellschaft. Component for a fuel element and a battery produced with these components. 3,775,184, Cl. 136-86.00r.

Kuhling, Dieter: *See*—
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Kuhnert, Hans: *See*—
Harak, Gerhard; Hubert, Heinrich; and Kuhnert, Hans, 3,774,928.

Kukla, William J., to International Business Machines Corporation. Disazo pigment sensitized photoconductor. 3,775,105, Cl. 96-1.600.

Kulikov, Alexei Kuzmich: *See*—
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Kulikov, Yakov Pavlovich: *See*—
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Kullman, Russel M.; and Reinhardt, Robert M., to United States of America, Agriculture. Process for facilitating postponement of fixation using reactive carbamate dyestuffs. 3,775,050, Cl. 8-41.00r.

Kunda, Wayl; and Hitesman, Roderick Herbert, to Sherritt Gordon Mines Limited. Cobalt precipitation from aqueous solutions. 3,775,098, Cl. 75-108.000.

Kunert, Klaus: *See*—
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Kunert, Max: *See*—
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Kunst, Robert J.; O'Neill, Thomas J.; and Szala, Norman M., to Pullman Incorporated. Railway passenger vehicle side plate construction. 3,774,553, Cl. 105-401.000.

Kunz, Harold Russell; and Walsh, Myles Alexander, to United Aircraft Corporation. Fuel cell utilizing fused thallium oxide electrolyte. 3,775,185, Cl. 136-86.00r.

Kunzli, Max: *See—*
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Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kusters, Eduard, Maschinenfabrik: *See—*
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Kutscher, Gerhard; and Wehling, Rolf, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Device for avoiding the accumulation of lint with ringless spinning. 3,774,386, Cl. 57-58.950.

Kuwabara, Hidemitso: *See—*
Matsuda, Shinji; Kuwabara, Hidemitso; Kubo, Hiroshi; Sasajima, Yoichi; Suzuki, Kensuke; and Fukamachi, Takashi, 3,775,549.

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L. I. R. S.p.A., Laboratorio Italiano: *See—*
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Debus, Henri Robert; Van Tongelen, Marcel; and Cahen, Raymond M., 3,775,495.
Debus, Henri Robert; Van Tongelen, Marcel; and Cahen, Raymond M., 3,775,499.

Lace, Melvin A., to Motorola, Inc. Spring clutch mechanism F tape cartridge. 3,774,861, Cl. 242-55.19a.

Lacey, Robert P., to Universal Oil Products Company. Vehicle control assembly. 3,774,711, Cl. 180-77.00r.

Lach, Robert E.; and Baldwin, Jack A., to GAF Corporation. Step motion projector. 3,774,828, Cl. 226-66.000.

Lacombe, Yves: *See—*
Courtois, Andre; Lacombe, Yves; Laporte, Jean; and Kovacsik, Georges, 3,775,060.

Lafond, Gilles Y., to Abex Corporation. Digger teeth. 3,774,324, Cl. 37-142.00r.

Lagally, Paul, to United States of America, Navy. Low friction bearing-journal arrangement. 3,774,983, Cl. 308-238.000.

Lagonegro, Paul R.: *See—*
Hartman, William R.; and Lagonegro, Paul R., 3,775,006.

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Lahiri, Adinath: *See—*
Mukherjee, Dilip Kumar; Chowdhury, Priya Bandhu; Sama, Jugal Kishore; Basu, Amarendra Nath; Basak, Nitya Goral; and Lahiri, Adinath, 3,775,286.

Lahr, Roy J., to Xerox Corporation. Method for providing an improved body electrode electrical connection. 3,774,592, Cl. 128-21.00e.

Lal, Saneja lundar: *See—*
Tandon, Tej Narayan; Lal, Saneja lundar; and Bhan, Sharma Chandra, 3,774,776.

Lambert, Roy E. Steam emitting ironing board. 3,774,327, Cl. 38-104.000.

Lamure, Bernard, to Societe Rhodiaceta. Phthalocyanine-type dyestuffs. 3,775,423, Cl. 260-295.00a.

Landa, Torstein: *See—*
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Lane, Carl A.: *See—*
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Lane, George C., to Warner-Lambert Company. Apparatus for coating continuous strips of ribbon razor blade material. 3,775,285, Cl. 204-298.000.

Lange, Gerhard, to Siemens Aktiengesellschaft. Gas discharge excess voltage arrester. 3,775,642, Cl. 317-61.500.

Lange, Lawrence K.: *See—*
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Langen, Peter: *See—*
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Langenbach, Bob J., to Abex Corporation. Machine tool with outboard support for drill. 3,775,021, Cl. 408-234.000.

Langhammer, Hans Jurgen: *See—*
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Langley, Robert; and Warwick, William Gill, to Ciba-Geigy AG. Preparation of pigments. 3,775,149, Cl. 106-308.00q.

Langone, Michael J. Filters. 3,774,601, Cl. 128-140.00n.

Lanthier, Raymond, to Gulf Oil Canada Limited. Polymer cross-linking using system containing N-methylol amide groups and an acidic sulfamate compound. 3,775,512, Cl. 260-851.000.

Lapidus, Milton; and McGettigan, Marian M., to American Home Products Corporation. L-3-Amino-4'-cyanosuccinanilic acid. 3,775,460, Cl. 260-465.00d.

Laporte, Jean: *See—*
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Larker, Hans: *See—*
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Laughrey, Richard A.: *See—*
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,775,114.

Launt, Larry L., to Information Transfer, Inc. Latchable magnetic reed switch. 3,775,712, Cl. 335-153.000.

Laurent, Jean, to Institut Francais du Petrole des Carburants et Lubrifrants. Device for sensing pressure in a liquid medium. 3,775,737, Cl. 340-7.00r.

Lauridsen, Walter E.: *See—*
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Anderson, A. D.; Lauridsen, Walter E.; and Overstreet, Charles L., 3,774,265.

Lautenschlager, Eric G.: *See—*
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LaVange, Donald H., to Polytop Corporation. Float controlled dispensers. 3,774,808, Cl. 222-57.000.

Lavik, Melvin T.; Moore, George D.; and Hubbell, Ronald D., to Midwest Research Institute. Mixtures of alkaline earth metal fluorides bonded to bearing surface with aluminum phosphate. 3,775,318, Cl. 252-12.000.

Lawrence, Garth D.; and Ott, Jack J., to Dow Chemical Company, The. Manufacture of composites containing a thermally shaped inorganic fiber form. 3,775,530, Cl. 264-257.000.

Lawrence Paper Company: *See—*
Ware, Franklyn O.; and Hill, Alan M., 3,775,144.
Ware, Franklyn O.; and Hill, Alan M., 3,775,145.

Laxineta, Stephen C.: *See—*
Schone, Henry L.; Geer, William W.; Laxineta, Stephen C.; and Koistinen, Clayton W., 3,774,825.

Layne, Gilbert S., to Dow Chemical Company, The. Ebullient cooling of high temperature metalliferous vapors. 3,775,093, Cl. 75-68.00b.

Le Vacon, yannick: *See—*
Pompei, Jean; and Le Vacon, yannick, 3,775,277.

Leary, David E., to Owens-Corning Fiberglas Corporation. Composite linear elements. 3,775,228, Cl. 161-55.000.

Leathen, William W.: *See—*
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Lebegue, Maurice K., to National Mine Service Company. Continuous mining machine. 3,774,969, Cl. 299-76.000.

Lecarpentier, Louis Jules Desire. Tilting chair. 3,774,961, Cl. 297-260.000.

Leclerc, Pierre, to Thomson-CSF. Mosaic of M. O. S. type semiconductor elements. 3,775,646, Cl. 317-235.00r.

Lecomte, Claude M., to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H. Floating systems, especially mooring buoys, for anchoring to the sea-bed. 3,774,253, Cl. 9-8.00p.

Ledinsky, Ronald R., to Middougy, W. Vance, & Associates. Lid lifter and drop sleeve mechanism. 3,774,787, Cl. 214-35.00r.

Lee, Henry L., Jr.: *See—*
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Lee, John T. M.: *See—*
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Lee, Raymond, Organization, Inc., The: *See—*
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Lee, Robert P.; and Lee, Poy. Sequentially positioned trash saving hopper outlets. 3,774,945, Cl. 291-38.000.

Leenaards, Antoine Joseph, to Crown Cork and Seal Company Inc. Receptacle with an externally threaded neck closed by a crown cork. 3,774,795, Cl. 215-39.000.

Leesona Corporation: *See—*
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Lehmann, Joachim: *See—*
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Lehmann, Klaus; and Pennewiss, Horst, to Rohm G.m.b.H. Copolymer coatings for pharmaceuticals. 3,775,537, Cl. 424-21.000.

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Leland Stanford Junior University, The, Board of Trustees: *See—*

Chodorow, Marvin, 3,774,717.
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Lemelson, Jerome H. Molded container with internal support means. 3,774,812, Cl. 222-211.000.
Lemelson, Jerome H. Apparatus for working moldable material. 3,774,890, Cl. 259-185.000.
Lenaeus, George E.; Cofer, Daniel B.; and Murphy, John H., to Southwire Company. Apparatus for high speed continuous casting. 3,774,669, Cl. 164-278.000.
Lenfant, Rene: *See—*
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Leo, Bruno S., to United States of America, Air Force. Magnetically driven cryogen vuilleumier refrigeration. 3,774,405, Cl. 62-6.000.
Leonard, Gordon Harris, to C.A.V. Limited. Control device for use with a fuel injection pump. 3,774,467, Cl. 74-469.000.
Leonard, William J., Jr., to Shell Oil Company. Metal-polymer matrices and their preparation. 3,775,352, Cl. 260-2.50b.
Leopoldi, Norbert. Steel measuring tape holder. 3,774,309, Cl. 33-138.000.
Lerner, Hershey, to Automated Packaging Systems, Inc. Apparatus for packaging articles. 3,774,367, Cl. 53-67.000.
Les Etablissements Marechal S.A.: *See—*
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Leslie, Victor Jeffrey; Newton, Alan Branford; and Rose, John Brewster, to Imperial Chemical Industries Limited. Aromatic polymers of 2-bromo-8-hydroxy-5,5-dioxodibenzothiophen. 3,775,368, Cl. 260-49.000.
Lesner, Richard S., to Chicago Pneumatic Tool Company. Pneumatic marking device. 3,774,479, Cl. 81-52.500.
Leszkovszky, Gyorgy: *See—*
Harsanyi, Kalman; Nador, Karoly; Takacs, Kalman; Korbonits, Dezso; Kiss, Pal; Simay, Antal; Bodrogi, Istvan; Tardos, Laszlo; and Leszkovszky, Gyorgy, 3,775,409.
Letosky, Vincent H., to General Motors Corporation. Internal combustion engine ignition timing instrument. 3,775,672, Cl. 324-16.00r.
Leutner, Volkmar; and Romes, Roman, to Bosch, Robert, G.m.b.H. Converter for converting electrical signals into fluid signals. 3,774,644, Cl. 137-831.000.
Lever Brothers Company: *See—*
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Lewicki, George W.; and Guisinger, John E., to California Institute of Technology. Magneto-optic detection system with noise cancellation. 3,775,570, Cl. 179-100.2ch.
Lewis Engineering Company, The: *See—*
Dubauskas, Thomas A., 3,775,617.
Lewis, John C., Jr., to Tucel Industries, Inc. Machinery for handling synthetic filament. 3,774,782, Cl. 214-6.00d.
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Libbey-Owens-Ford Company: *See—*
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Lich, Richard L., to General Steel Industries, Inc. Fluid sprung railway truck. 3,774,549, Cl. 105-182.00r.
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Merkley, Darrell P. Mast hoist. 3,774,781, Cl. 214-3.000.

Merrell, Richard G., to Zenith Radio Corporation. Logic control circuit. 3,775,691, Cl. 328-48.000.

Merrill, Edward W., to Estin, Hans H., Cronkhite, Leonard W., Jr. and Wolbach, William W., trustees of River, Charles, Foundation, The. Composition for removing polynuclear aromatic hydrocarbons from burning tobacco gas-smoke. 3,774,623, Cl. 131-17.00r.

Merritts, Floyd L. Trailer assembly. 3,774,940, Cl. 280-408.000.

Merz, Ewald: *See*—
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Messer, Leonard; and Woolf, Philip L., to American Minechem Corporation. Fluidized solid particle fuel. 3,775,070, Cl. 44-10.00r.

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Metramatic Corporation, The: *See*—
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Metzler, Albert; Wright, William W.; Howell, John J.; and Collette, Richard L., to Guardian Electric Manufacturing Company. Elevator call circuit. 3,774,728, Cl. 187-29.00r.

Meuller, Roger P.: *See*—
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Meyer, Leonard S., to Berkley & Company, Inc. Laminate structure for water skis. 3,774,254, Cl. 9-310.00a.

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Meysenburg, Raymond Richard: *See*—
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Meysenburg, Raymond Richard; Recker, Robert James; Wetrich, Peter Donald; Kelly, Charles Whippel; Hertzog, William Frederick; and Conner, James Mervyn, to Deere & Company. Transmission and controls therefor. 3,774,475, Cl. 74-740.000.

Micheletti, Ciro, to Societa' per l'Esercizio Dell'Istituto Sperimentale Metalli Leggeri. Self-coloring anodic oxidizing process for aluminum and for alloys thereof. 3,775,269, Cl. 204-58.000.

Michels, Paul W.; and Heun, Arnold, to Homburg N.V. Process for preserving hams and picnics. 3,775,134, Cl. 426-281.000.

Michelson, Gunnar P. Method of making a razor edge safety guard. 3,774,294, Cl. 29-432.000.

Michener, Lynn H. Double barreled apparatus for clearing land. 3,774,686, Cl. 172-26.500.

Microm; a division of Colight Inc.: *See—*
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Middougy, W. Vance, & Associates: *See—*
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Midwest Research Institute: *See—*
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Mierzwa, Anthony M.: *See—*
Georgiana, Joseph M.; Rolls, James A.; Voss, Donald R.; Mierzwa, Anthony M.; and Paradis, Robert A., 3,775,359.

Mihalcheon, Arthur: *See—*
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Mikhailov, Viktor Vasilievich; Litver, Semen Lvovich; Popov, Alexei Nikolaevich; and Popova, Valentina Alexandrovna. Method of producing stressing cement. 3,775,143, Cl. 106-89.000.

Miles, Floyd D., to International Telephone and Telegraph Corporation. Capacitive fibrillation apparatus using vacuum relays. 3,775,658, Cl. 320-1.000.

Militana, Salvatore G.: *See—*
Winters, Henry, 3,775,214.

Miller, Alfred H.; and Dean, George A., to Libbey-Owens-Ford Company. Apparatus for handling sheet material. 3,774,783, Cl. 214-7.000.

Miller, George T., to Hooker Chemical Corporation. Leather treatment. 3,775,162, Cl. 117-93.1dh.

Miller, Gordon H., to Texaco Inc. Polymerization of aromatic nitriles. 3,775,380, Cl. 260-78.40n.

Miller, Herman, Inc.: *See—*
Watamura, Donald; and Doester, Everett L., 3,774,962.

Miller, John B.; and Horrigan, Marion F., to Transelco, Inc. Glass polishing agent of sodium zirconium silicate. 3,775,068, Cl. 51-308.000.

Miller, Joseph J.: *See—*
Cribben, James T.; and Miller, Joseph J., 3,774,343.

Miller, Philip, to Chemstitch, Inc. Mattress including laminated foam fabrics and their production. 3,774,250, Cl. 5-345.000.

Millmaster Onyx Corporation: *See—*
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Mimachi, Motomu: *See—*
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Minagawa, Yoshisato: *See—*
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Minamikawa, Yoshihisa; and Komoda, Tsutomu, to Hitachi, Ltd. Electron gun device of field emission type. 3,775,630, Cl. 313-82.00r.

Minarik, Ronald W.: *See—*
Bozanic, Donald A.; Mergerian, Dickron; Minarik, Ronald W.; and Pincoffs, Peter H., 3,775,670.

Mindner, Reinhard; Adler, Karl-Heinz; Flaschar, Heinz; and Schneider, Klaus. Electrohydraulic control arrangement for hydraulic actuators. 3,774,641, Cl. 137-625.640.

Minnesota Automotive, Inc.: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
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Collins, John L., 3,775,009.
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Mita Industrial Company, Ltd.: *See—*
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Mitchell, Wallace F., to Ammco Tools, Inc. Vibration dampener. 3,774,472, Cl. 74-574.000.

Mitchell, Wallace F. Vibration dampener. 3,774,473, Cl. 74-574.000.

Mitchner, Joseph L.; Keller, Robert A.; and Graham, Clyde B., to National Cash Register Company, The. Apparatus for assembling a print head. 3,774,899, Cl. 269-315.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsuboshi Sangyo Kabushiki Kaisha: *See—*
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Miyakawa, Seinan, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic aperture controls for motion picture cameras. 3,775,001, Cl. 352-141.000.

Miyazawa, Yoshihide; and Ozutsumi, Minoru, to Hodozaya Chemical Co., Ltd. Color-forming duplicating method. 3,774,539, Cl. 101-469.000.

Mizobata, Shiro; Kawano, Yoshiro; and Matsumoto, Masamiki, to Matsushita Electric Works, Ltd. Lawn mower. 3,774,379, Cl. 56-10.300.

Mizuguchi, Ryuzo: *See—*
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Kaeding, Warren W.; and Butter, Stephen A., 3,775,501.
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Moerke, Delford A. Welding gun. 3,775,584, Cl. 219-130.000.

Moller, George O.: *See—*
Tobey, Hobert E.; Moller, George O.; and Twiford, Richard L., 3,774,749.

Moller, Tilo; and Ketterer, Dieter, to Heckler & Koch GmbH. Charging device for automatic firearms. 3,774,498, Cl. 89-1.00k.

Moloney, William F., Jr.: *See—*
Eino, Ernest; Moloney, William F., Jr.; and Toledo, Emil, 3,775,268.

Monaghan, Alfred C., to Monaghan Automated Systems, Inc. Container construction and container blank. 3,774,835, Cl. 229-32.000.

Monaghan Automated Systems, Inc.: *See—*
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Monitor Technology, Inc.: *See—*
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Monkovic, Ivo; and Conway, Terry Thomas, to Bristol-Myers Company. Process for the preparation of 14-hydroxymorphinan derivatives. 3,775,414, Cl. 260-285.000.

Monroe X-Ray Company: *See—*
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Monsanto Company: *See—*
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Montagne, Jean Bernard, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Truck tire having carcass extension. 3,774,663, Cl. 152-362.00r.

Montoya, John L.: *See—*
Sjoman, Carl F.; Wilson, Clyde R.; Montoya, John L.; and Bullett, Casper L., 3,774,903.

Mook, Philip H.; and Westfall, Theodore R., to Sweco, Inc. Screening aerator concentrator. 3,775,311, Cl. 210-44.000.

Moore, Alvin Edward. Light-weight, crash-resistant, vehicular structure. 3,774,566, Cl. 114-65.00r.

Moore, Charles T. Animal, bird or like cage. 3,774,576, Cl. 119-17.000.

Moore, Clifford J., to Misterhouse Toys, Inc. Children's play garage with self-contained storage compartment. 3,774,357, Cl. 52-36.000.

Moore, George D.: *See—*
Lavik, Melvin T.; Moore, George D.; and Hubbell, Ronald D., 3,775,318.

Moosmann, Alois. Pressure operated device for a pressure operated servo-turbine. 3,775,022, Cl. 415-61.000.

Moot, John R., to Cornwall Corporation. Corn popper. 3,774,523, Cl. 99-323.800.

Moran, Kevin P.: *See—*
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Morey, Norval K.; and Smith, Leward N., 3,774,660.

Moreau, Albert T. Apparatus for cleaning coke oven doors. 3,774,258, Cl. 15-93.00a.

Morelli, Benjamin J. Projector table cabinet. 3,774,872, Cl. 248-11.000.

Morey, Norval K.; and Smith, Leward N., to Morbark Industries, Inc. Apparatus for debarking logs. 3,774,660, Cl. 144-208.00f.

Morgan, William L.: *See—*
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Morikawa, Mitsuaki, to Ise Electronics Corporation. Dispersion type electroluminescent elements. 3,775,631, Cl. 313-108.00a.

Morimoto, Akira: *See—*
Ochiai, Michihiko; Aki, Osami; Morimoto, Akira; Okada, Taiiti; and Masuda, Katsutada, 3,775,408.

Morin, Richard A. Adjustable socket wrench. 3,774,482, Cl. 81-165.000.

Moriyama, Inao, to Canon Kabushiki Kaisha. Variable sector shutter device. 3,775,002, Cl. 352-216.000.

Morozko, Ekaterina Alexandrovna: *See—*
Logvinenko, Dmitry Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Chechik, Ljudmila Efimovna; Shelyakov, Oleg Parfirovich; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; and Kuzmina, Ljudmila Nikolaevna, 3,774,885.

Morrall, Michael Herbert James: *See—*
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Morris, Herbert C.; Cooper, Thomas A.; Cummins, Billy H.; and Sweeney, Donald E., Jr., to Texaco Inc. Hydroconversion process for production of LPG in presence of mordenite aluminosilicate. 3,775,298, Cl. 208-111.000.

Morris, Philip, Incorporated: *See—*
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Morris, Rupert C.: *See—*
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Moseley, Anthony; and Morrall, Michael Herbert James, to Halley, James, & Sons Limited. Web Joining devices. 3,775,223, Cl. 156-502.000.

Mosimann, Walter: *See—*
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Mosley, David Roy, to Harvey Plant Holdings, Limited. Apparatus for removing linings and or/slag from furnaces and the like. 3,774,698, Cl. 173-43.000.

Mostek Company: *See—*
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Motion Dynamics, Inc.: *See—*
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Lace, Melvin A., 3,774,861.

Mouillon, Paul, to Barthalon, Maurice. Switching system for a moving unit guided along a track. 3,774,544, Cl. 104-130.000.

Moulton, Marc L., to United States of America, Navy. Digital phase discriminators and video gate generators. 3,775,558, Cl. 178-6.800.

Mount Hope Machinery Company: *See—*
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Mruk, Norbert J., to Koppers Company, Inc. Method for the oxidation of aryl methyl groups to carboxylic acid groups. 3,775,473, Cl. 260-524.00m.

Muehleman, Russell N.: *See—*
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Mukherjee, Dilip Kumar; Chowdhury, Priya Bandhu; Sama, Jugal Kishore; Basu, Amarendra Nath; Basak, Nitya Goral; and Lahiri, Adinath, to Council of Scientific & Industrial Research. Hydrogenation of coal. 3,775,286, Cl. 208-10.000.

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Muller, Jean-Claude: *See—*
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Munksjo Aktiebolag: *See—*
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Munzi, Ronald F., to Westinghouse Electric Corporation. Manual latch retriever assembly for a railway car coupler. 3,774,777, Cl. 213-159.000.

Muranaka, Tsuneo, to Tokyo Shibaura Denki Kabushiki Kaisha. Device for detachably supporting glass bulb molds. 3,775,086, Cl. 65-323.000.

Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Yoshida, Hiromi, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing alkoxysilanes. 3,775,457, Cl. 260-448.80r.

Muroga, Ko: *See—*
Akimaro, Haruo; Yamamoto, Koichi; Muroga, Ko; Shirasu, Hirotoshi; Araki, Noboru; and Nakajo, Toshihiko, 3,775,566.

Muroga, Masafumi, to Kabushiki Kaisha Tanita Seisakusho. System for lighting a group of lamps in a personal weighing device. 3,774,705, Cl. 177-173.000.

Murphy, David M. Gear motor. 3,774,477, Cl. 74-801.000.

Murphy, Gerald Francis; Ehlers, Stanley Harold; and Arthur, Richard, to Deere & Company. Segment wheel ballast for a tractor. 3,774,970, Cl. 301-41.00w.

Murphy, John H.: *See—*
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Muzychenko, Paul J.; and Mallan, George M., to Occidental Petroleum Corporation. Hydraulic seal for salt water ponds. 3,774,402, Cl. 61-1.00r.

Nador, Karoly: *See—*
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Nagamatsu, Kazuo. Ampoule inspection using a television camera. 3,775,556, Cl. 178-6.800.

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Nagano, Toshihiro: *See—*
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Nagaswa, Masao, to Nippondenso Co., Ltd. Ignition timing signal generator. 3,775,627, Cl. 310-70.000.

Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Coating composition of a copolymer of methyl methacrylate with the polymerizable addition reaction product of an α,β-ethylenically unsaturated acid and an epoxy compound with a cellulosic ester or ether. 3,775,356, Cl. 260-17.00r.

Nago, Masayoshi: *See—*
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Nakamura, Toshio; Egawa, Hitoshi; and Kawai, Sadaharu, to Hitachi, Ltd. Bearing device for rotary machines. 3,774,982, Cl. 303-187.100.

Nakano, Michio: *See—*
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Nanba, Hironobu, to Funai Electric Co., Ltd. Tape recorder for endless tape cartridges. 3,774,916, Cl. 274-4.00f.

Narayan, Venkat Chellam, to Aktiengesellschaft Brown, Boveri & Cie. Circuit arrangement for producing two frequency independent mutually phase shifted output A.C. voltages from two input A.C. voltages. 3,775,668, Cl. 323-122.000.

National Can Corporation: *See—*
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Nebelung, Hermann H.; and Foster, Thomas V., to Emhart Corporation. Pneumatic selective glass gob distribution system. 3,775,083, Cl. 65-225.000.

Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van de Ryksverdediging: *See—*

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Neeff, Rutger, to Bayer Aktiengesellschaft. Process for the continuous dyeing of polyester fibers with anthraquinone dyestuffs. 3,775,048, Cl. 8-39.000.
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Nemeth, Tibor Laszlo, to Pantasate Company of New York, The. Finely divided carbon black modified unmasticated polymers of vinyl monomers. 3,775,357, Cl. 260-17.00a.
Nemir, Clarence T., to Carribean Cashew Company. Nut shelling machine. 3,774,526, Cl. 99-582.000.
Nemit, Jeffrey T., to International Telephone and Telegraph Corporation. Technique for generating planar beams from a linear doppler line source employing a circular parallel-plate waveguide. 3,775,773, Cl. 343-781.000.
Nerwin, Hubert, to Eastman Kodak Company. Photographic film unit. 3,775,127, Cl. 96-76.00c.
Neville, James J.; and Shichman, Daniel, to Uniroyal, Inc. Production of high soft stretch tapes of reinforcing cords for molded elastomeric articles. 3,774,662, Cl. 156-148.000.
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Nicastro, Carmine A., Jr.; Vander Noordaa, Roelant S. L.; and Ward, William A., to Corning Glass Works. Manufacture of vitreous silica bodies. 3,775,077, Cl. 65-18.000.
Nichenkl, Hans-Jaochim, to Sinram & Wendt. Heated press. 3,775,588, Cl. 219-243.000.
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Ninomiya, Michikazu: *See*—
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Okamoto, Miyoshi; Hikota, Toyohiko; and Shimizu, Kitao, to Toray Industries, Inc. Needle felting apparatus. 3,774,273, Cl. 28-4.00r.

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Orr, John L., to Keystone Consolidated Industries, Inc. Interlocking dead bolt lock and strike. 3,774,420, Cl. 70-104.000.

Orr, John L., to Keystone Consolidated Industries, Inc. Retaining means for a lock cylinder plug. 3,774,423, Cl. 70-375.000.

Ort, Wolfgang: *See—*
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Paddock, Paul F., to Sunkist Growers, Inc. Conveyor with rocking units to roll round articles. 3,774,746, Cl. 148-30.000.

Page, Wilbur Mills; and Riley, Charles Thomas, to Clayton Dewandre Company, Limited. Spring brake units. 3,774,507, Cl. 92-130.000.

Pallo, John M., to Johns-Manville Corporation. Rotor cooling system for a centrifugal rotary fiberizing unit. 3,775,076, Cl. 65-12.000.

Pambello, Samuel M. Novelty lamp. 3,775,604, Cl. 240-10.00f.

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Pao, Cohon. Battery operated eraser. 3,774,255, Cl. 15-3.530.

Paprzycki, Herman J.; Kennedy, Edward J.; Martinez, Henry G.; and Stabilito, Dominick D. Tablet counting and filling apparatus. 3,774,368, Cl. 53-78.000.

Papst-Moteren K.G.: *See—*
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Paquette, Elmer Gordon; and Guenther, Karl R., to Bjorksten Research Laboratories, Inc. Non-woven articles made from continu-

ous filaments coated with discrete droplets. 3,775,209, Cl. 156-181.000.

Paquette, Elmer Gordon; and Guenther, Karl Russell, to Bjorksten Research Laboratories, Inc. Non-woven articles made from continuous filaments coated in high density fog with high turbulence. 3,775,210, Cl. 156-181.000.

Paradine, Terry E., to United States Steel Corporation. Steering roll assembly for continuous strip mill. 3,774,831, Cl. 226-194.000.

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Parsons, David. Anti-skid control means for liquid pressure braking systems. 3,774,976, Cl. 303-21.00f.

Pasieka, John F.; and Kennedy, Charles B., to Polaroid Corporation. Encoded identification card system. 3,775,594, Cl. 235-61.11e.

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Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, to Texaco Inc. Cyano carboxylic compound manufacture from hydrocarbyl cyanide. 3,775,459, Cl. 260-465.00d.

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Patton, Jimmie Donald; and Wuttke, Klaus Guenther, to Du Pont de Nemours, E. I., and Company. Tubular electtochemical cell with electrochemical electrodes and compressed central spindle. 3,775,182, Cl. 136-13.000.

Pauels, Heinrich, to Schloemann Aktiengesellschaft. Method of rolling E.G. light sections on a mill and a mill for use with the method. 3,774,433, Cl. 72-203.000.

Paulson, John K. Coacting wheel type ball projecting device. 3,774,584, Cl. 124-1.000.

Paulson, John W., to ESB Incorporated. Aqueous electrolyte solution containing an ethoxylated rosin amine for use in a rechargeable electric battery. 3,775,183, Cl. 136-30.000.

Paxos, Hector V. Lighter carrying marine vessel. 3,774,565, Cl. 114-43.500.

Pearlstein, Burton A.: *See—*
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Perret, Samuel Leon; deceased (by Hugeunin, Eric; administrator). Reflector for projecting or receiving radiation. 3,774,995, Cl. 350-294.000.

Perrington, Kenneth J.; Vogelgesang, Peter J.; and Knudsen, James K., to Minnesota Mining and Manufacturing Company. Dual-layer quadruplex video recording tape. 3,775,178, Cl. 117-239.000.

Perry Plastics, Inc.: *See—*
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Peter, Wolfgang: *See—*
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Peters, Claudius, A.G.: *See—*
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Peters, Philip H., Jr., to Environment/One Corporation. Induction cooking apparatus having pan safety control. 3,775,577, Cl. 219-10.490.

Peterson, Alan H.; and Dormish, Frank L., to Marathon Oil Company. Integrated hydrotreating and catalytic cracking system for refining sour crude. 3,775,290, Cl. 208-50.000.

Peterson, Alan H.; and Dormish, Frank L., to Marathon Oil Company. Producing coke from hydrotreated crude oil. 3,775,294, Cl. 208-89.000.

Peterson, Robert S.; and Hensleigh, Elvin A., to Westinghouse Electric Corporation. Proportional integrator squared (PI) 2 speed controller for utilization in a speed regulator system. 3,775,653, Cl. 318-326.000.

Peterson, Robert S.; and Hensleigh, Elvin A., to Westinghouse Electric Corporation. Proportional integrator squared (PI) 2 speed controller for utilization in a speed regulator system. 3,776,753, Cl. 318-326.000.

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Pfeiffer, Heinrich, to Dieffenbacher G.m.b.H. Heating platen press. 3,775,033, Cl. 425-109.000.

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Uraneck, Carl A.; Trepka, William J.; and Brown, James D., 3,775,369.

Phillips, Ronald; and Miracki, Zdzislav Stanislav, to Simms Group Research & Development Limited. Drive couplings. 3,774,411, Cl. 64-25.000.

Philp, Richard, to Atco Structures Inc. Wall frame for a foldable steel building. 3,774,356, Cl. 52-70.000.

Piccotti, Enzo, to Ilford Limited. Selenium compounds. 3,775,125, Cl. 96-60.0bf.

Piekarski, Gorrtried: *See—*
Hundmeyer, Anton; Lochner, Fritz; and Piekarski, Gorrtried, 3,775,389.

Pierce, Alan E. Oxidation of hydrindantin. 3,775,481, Cl. 260-590.000.

Pifferi, Giorgio, to I.S.F. S.p.A. Process for preparing 2-dialkylaminoethyl 4-alkoxy-3-aminobenzoates. 3,775,464, Cl. 260-472.000.

Pilgram, Kurt H.; Medema, Dirk; Soloway, Sameul B.; and Gaertner, George W., Jr., to Shell Oil Company. Production of hydroxyaryl thioethers. 3,775,485, Cl. 260-609.00r.

Pillard, Marcel T., to Entreprise Generale de Chauffage Industriel Pillard Freres & Cie. Burning Liquid fuels. 3,775,038, Cl. 431-175.000.

Pillard, Marcel T., to Entreprise Generale de Chauffage Industriel Pillard Freres et Cie. Burners for liquid or gaseous fuels. 3,775,039, Cl. 431-350.000.

Pincoffs, Peter H.: *See—*
Bozanic, Donald A.; Mergerian, Dickron; Minarik, Ronald W.; and Pincoffs, Peter H., 3,775,670.

Pinner, Gordon Frederick: *See—*
Sparham, Vaughan; and Pinner, Gordon Frederick, 3,774,770.

Pinto, Olympio F. Flying saucer. 3,774,865, Cl. 244-23.00c.

Pioneer Medical Systems, Inc.: *See—*
Huszar, Robert J., 3,774,594.

Pitacco, Sergio, to ITT Industries, Inc. Lamp holder. 3,775,728, Cl. 339-14.00r.

Pittsburgh-Des Moines Steel Company: *See*—
Anderson, Lloyd E., Sr.; and Hills, Richard E., 3,774,563.
Pitzer, Emory W., to Phillips Petroleum Company. Tin-phosphorus catalyzed oxidative dehydrogenation. 3,775,508, Cl. 260-680.00e.
Plastic Tubes Company, division of Multi-Tech, Incorporated: *See*—
Kinney, C. Mills, Jr.; and Daringer, Ronald G., 3,775,527.
Platt, James L., Jr., to Chevron Research Company. Preparation of phosphoroamidothionate by ketene acylation. 3,775,519, Cl. 260-984.000.
Platz, Rolf: *See*—
Duembgen, Gerd; and Platz, Rolf, 3,775,507.
Plotkin, Nakhman Zalmanovich; Kulikov, Yakov Pavlovich; Loginov, Vladimir Ivanovich; Tsukanov, Georgy Emmanuilovich; Shkuta, Eduard Ivanovich; Statkevich, Artem Alexandrovich; and Ivanaevsky, Vikenty Ivanovich. Annular roasting machine for loose materials.3,774,891, Cl. 266-21.000.
Pneumo Dynamics Corporation: *See*—
Heintz, Richard Paul, 3,774,463.
Poeschl, Franz, to Loesche Hartzerkleinerungs- und zement-Maschinen KG. Breaker roll mill. 3,774,854, Cl. 241-52.000.
Poirette Corsets, Inc.: *See*—
Dabe, Dolores T., 3,774,621.
Polaroid Corporation: *See*—
Bullock, Edward K., 3,774,538.
Burgarella, John P.; Carcia, Peter P.; and Kee, Richard C., 3,774,516.
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Johnson, Bruce K., 3,774,510.
Johnson, Bruce K., 3,774,519.
Pasieka, John F.; and Kennedy, Charles B., 3,775,594.
Rogers, Howard G., 3,774,988.
Seiden Myron A.; and Barr, Charles A., 3,774,512.
Poll, Elmer J. Process and apparatus for introducing liquids into soil. 3,774,556, Cl. 111-7.200.
Polysius Aktiengesellschaft, mesne: *See*—
Triebel, Wolfgang; and Durr, Manfred, 3,775,042.
Polytop Corporation: *See*—
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LaVange, Donald H., 3,774,808.
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Holzer, Helmut, 3,774,429.
Pompa, Leonard A., to Universal Oil Products Company. Flange-free venturi nozzle insert. 3,774,645, Cl. 138-44.000.
Pompei, Jean; and Le Vacon, yannick, to U.S. Philips Corporation. Method of determining the thickness of a layer of dielectric material during its growth. 3,775,277, Cl. 204-192.000.
Popov, Alexei Nikolaevich: *See*—
Mikhailov, Viktor Vasilievich; Litver, Semen Lvovich; Popov, Alexei Nikolaevich; and Popova, Valentina Alexandrovna, 3,775,143.
Popova, Valentina Alexandrovna: *See*—
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Porter, Irwin C.; Barcus, Jack L.; Bear, David L.; and Marshall, James E., to Mattel, Inc. Phonograph toy. 3,774,914, Cl. 274-1.00a.
Porter, Maurice Read: *See*—
Baker, Crispin Stuart Leworthy; Barnard, Douglas; and Porter, Maurice Read, 3,775,441.
Portwood, Owen, Jr.: *See*—
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Potoski, John R.; and Freed, Meier E., to American Home Products Corporation. 3-Methylenequinuclidine oxide. 3,775,419, Cl. 260-293.530.
Potts, Vernon C., to Chargematic, Inc. Means and methods for battery charge retention circuits. 3,775,660, Cl. 320-23.000.
PPG Industries, Inc.: *See*—
Baker, John G.; and Yerty, Oliver M., 3,775,513.
Barter, James A., 3,775,341.
Prange, Charles J., to Rockwell International Corporation. Mobile sewer or like cleaning machine. 3,774,630, Cl. 137-355.120.
Pravednekow, Nicholas. Utility device. 3,774,930, Cl. 280-47.240.
Precoul, Michel, to Societe d'Etudes de Realisation et d'Applications Techniques Serat. Repeating weapon. 3,774,499, Cl. 89-1.816.
Prehmus, George F.; and Verch, Richard R., to Environment/One Corporation. Explosion proof enclosure with withdrawable electrical component mounting panel. 3,775,551, Cl. 174-52.00r.
Preis, Lothar: *See*—
Wlisbeck, Roland; Suling, Carlhans; Pampus, Gottfried; and Preis, Lothar, 3,775,535.
Price, Elmo D., Jr.: *See*—
Freeze, John A.; Price, Elmo D., Jr.; and Wilburn, Garlington C., 3,775,675.
Price, Warren H.: *See*—
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Prichard, William W., to Du Pont de Nemours, E. I., and Company. Preparation of pentahalobenzenes from tetrahalobenzenes. 3,775,490, Cl. 260-650.00r.
Prirrmann, Rolf Wilhelm, to Geistlich Ed Sohne AG fur Chemische Industrie. α-Aryl-succinimido-sulphonamide derivative. 3,775,401, Cl. 260-239.600.
Pritcheet, Wilson S.: *See*—
Barta, Karll; and Pritcheet, Wilson S., 3,775,683.
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Nunn, Frank C., 3,774,836.
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Proebsting, Robert J., to Mostek Company. MOSFET logic inverter for integrated circuits. 3,775,693, Cl. 335-35.000.
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Pruess, David: *See*—
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Pullman Incorporated: *See*—
Kunst, Robert J.; O'Neill, Thomas J.; and Szala, Norman M., 3,774,553.
O'Neill, Thomas J.; and Szala, Norman M., 3,774,554.
Snyder, Richard C.; and Wold, Harold A., 3,774,552.
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Punnett, Frazer D., to Xerox Corporation. Method of electrostatically copying information on both sides of an original onto both sides of a support material. 3,775,102, Cl. 96-1.00r.
Purcell, Robert J. Portable hydraulic livestock scale. 3,774,704, Cl. 177-126.000.
Purcell, Robert J.; and Wehr, Kenneth E., to Caterpillar Tractor Company. Triangular track resilient bogie suspension. 3,774,708, Cl. 180-9.500.
Puttick, Jeffrey Roy, to National Research Development Corporation. Internal combustion engines. 3,774,391, Cl. 60-14.000.
Quay, Roy G.; and Mayne, William Harry, to Petty Geophysical Engineering Company. Selective sequential input switching method for seismic surveying. 3,775,738, Cl. 340-7.00r.
Quine, John P., to General Electric Company. Amplifier for microwaves comprising radial waveguide-hybrid. 3,775,694, Cl. 330-56.000.
Quinn, Brian P., to United States of America, Air Force. Acoustic wing stall delaying device. 3,774,867, Cl. 244-40.00r.
Raihill, Ioni R.; and Robinson, Sharon D. Carrier for skis and ski poles. 3,774,826, Cl. 224-55.000.
Raleigh Industries of Canada Limited - Les Industries Raleigh du Canada Limitee: *See*—
Basek, Charles, 3,774,732.
Rams, Michael J.; Rosenthal, Arnold J.; and Clarke, Charles M., to Celanese Corporation. Carbonization/graphitization of polyacrylonitrile fibers containing residual spinning solvent. 3,775,520, Cl. 264-29.000.
Randolph, Arthur J.; and Horsting, Albertus G. Poultry handling apparatus. 3,774,578, Cl. 119-97.00r.
Ranney, Hinkley H.: *See*—
Brown, Roger W.; and Ranney, Hinkley H., 3,774,501.
Ranz, James R., to Lau Incorporated. Direct driven blower. 3,775,029, Cl. 417-353.000.
RAP Industries Inc.: *See*—
Snow, John E., 3,775,239.
Rattray, William L., to AMF Incorporated. Apparatus for building tires. 3,775,220, Cl. 156-396.000.
Ravenelle, Richard L.; and Thorburn, David E., to United States of America, Air Force. Radio frequency store and display system. 3,775,690, Cl. 325-455.000.
Raymond, Francis A., to Vogler, Robert L. and North American Rockwell Corporation. Print press control system. 3,774,536, Cl. 101-207.000.
Raytheon Company: *See*—
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RCA Corporation: *See*—
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Recker, Robert James; Meysenburg, Raymond Richard; and Wetrich, Peter Donald, to Deere & Company. Transmission and controls therefor. 3,774,474, Cl. 74-740.000.

Reckziegel, Erick; and Mehmel, Wolfgang, to Henkel & Cie G.m.b.H. Hot melt adhesive compositions. 3,775,146, Cl. 106-218.000.

Redmore, Jerek, to Petrolite Corporation. Use as corrosion inhibitors, nitrogen-heterocyclic phosphonates. 3,775,057, Cl. 21-2.50a.

Reed, Rodney R. Liner inserting machine for pipelines. 3,774,286, Cl. 29-234.000.

Regie Nationale des Usines Renault: *See—*
Froumajou, Armand, 3,774,712.

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Reichert, Eduard: *See—*
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Reid, John Edgar, Jr.: *See—*
Reid, John Edgar, Jr.; and Muehleman, Russell N. (said Muehleman assor. to said), 3,774,494.

Reid, John Edgar, Jr.; and Muehleman, Russell N., said Muehleman assor. to said Reid, John Edgar, Jr. Automated rhythm teaching machine. 3,774,494, Cl. 84-470.000.

Reid, Robert E.: *See—*
McCoy, Frederic C.; Godfrey, Arthur W.; and Reid, Robert E., 3,775,324.

Reimlinger, Hans K.; and Vandewalle, Jan Joseph Maurice, to Mallinckrodt Chemical Works, mesne. S-Triazolo (3,4-A) isoquinolines and derivatives thereof. 3,775,416, Cl. 260-288.00r.

Reinhall, Rolf Bertil. Disc type press. 3,774,528, Cl. 100-121.000.

Reinhardt, Robert M.: *See—*
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Reinhart, Norman E.; and Mullender, Claude, to Goodrich, B. F., Company, The. Belt covering apparatus. 3,775,221, Cl. 156-460.000.

Reis, C. Dale: *See—*
Heeren, Vernon L.; Howell, James M.; and Reis, C. Dale, 3,775,769.

Reitblatt, Joseph, to Singer Company, The, mesne. Condensate collector pan heating. 3,774,406, Cl. 62-155.000.

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Remington Arms Company, Inc.: *See—*
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Remley, Kenneth Herald: *See—*
Hermann, David Trimble; and Remley, Kenneth Herald, 3,775,205.

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Research Corporation: *See—*
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Resenblatt, Solomon, to Chemplast Inc. Plastic duplicate of cellulosic or proteinaceous material, article or object. 3,775,170, Cl. 117-138.8na.

Restaurant Equipment Design Co.: *See—*
Gerson, Samuel L., 3,774,490.

Revell, Alan E.: *See—*
Welch, Wilson A.; and Revell, Alan E., 3,774,373.

Reynolds, Gordon Clifford. Safety lock device for a bolt action firearm. 3,774,333, Cl. 42-1.00r.

Reynolds, R. J., Tobacco Company: *See—*
Roberts, Donald L.; and Hege, Bonita P., 3,775,437.

Rhoades, Vallghan W., to Cities Service Oil Company. In situ gasification of coal by gas fracturing. 3,775,073, Cl. 48-210.000.

Rhodes, Herbert M., to Oil Mop, Inc. Oil mop method and apparatus for producing an oil well. 3,774,685, Cl. 166-314.000.

Rhone-Poulenc S.A.: *See—*
Auge, Jacques, 3,775,522.
Cognat, Michel, 3,774,600.
Commarmot, Roger, 3,774,639.
Dubourg, Jean, 3,775,323.

Ribesse, Jacques Max, to Centre Recherches Metallurgiques-Centrum Voor Research in de Metallurgie and S.A. Distrigaz N.V. Method and device for heating gases. 3,774,673, Cl. 165-1.000.

Rice, Bruce A. Snow gun. 3,774,843, Cl. 239-14.000.

Rich, John P., to Improved Machinery Inc. Grid structure with waved strips having apexes with enlarged sections formed therein. 3,775,234, Cl. 161-68.000.

Richards, Albert Z., Jr., to Key Minerals Corporation. Precipitation of metal proteinates from brines by base-acid-base hydrolysis. 3,775,132, Cl. 426-364.000.

Richards, Giles J.: *See—*
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Richardson, Jerry J.: *See—*
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Richter, Hans H., to Leesona Corporation. Yarn processing post treatment. 3,774,384, Cl. 57-34.0hs.

Richter, Robert K.: *See—*
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Ricoh Co., Ltd.: *See—*
Enomoto, Takamiti; Kawanishi, Toshiyuki; Yasumori, Akiyoshi; Shiga, Tsuyoshi; Hirosawa, Yujiro; and Kubota, Tomio, 3,775,130.
Ohta, Wasaburo; and Endo, Katutoshi, 3,775,109.

Riebel, Hans-Jochem; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. 1-Phenyl-2-cyano-2-methylvinyl-thionophosphoric (phosphonic) acid esters. 3,775,517, Cl. 260-940.000.

Rigdon, Orville W.; Edwards, Robert S.; and Holst, Edward H., to Texaco Inc. Photonitrosation of normal paraffins. 3,775,275, Cl. 204-162.0xn.

Rijnders, Johannes, to U.S. Philips Corporation. Lighting fitting for a U-shaped gas discharge lamp. 3,775,605, Cl. 240-25.000.

Riken Lightmetal Industry Company, Limited: *See—*
Ikeda, Katsushige; Hayashi, Isao; Katok, Takashi; Takahashi, Toshiro; Nagano, Toshihiro; and Wada, Kenji, 3,775,266.

RILCO Maschinenfabrik GmbH & Co. KG: *See—*
Hirn, Helmut; and Bott, Wolfgang, 3,774,640.

Riley, Charles Thomas: *See—*
Page, Wilbur Mills; and Riley, Charles Thomas, 3,774,507.

Risinger, Max K. Anaerobic bacteria laboratory. 3,775,256, Cl. 195-108.000.

Ritter, George F., Jr., to Libbey-Owens-Ford Company. Apparatus for conveying and heat treating hot glass with a roller conveyor. 3,775,087, Cl. 65-348.000.

Ritzenthaler, Richard L.: *See—*
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Rjumshina, Nadezhda Vasilievna; Vasiliev, Gennady Fedorovich; and Vozlinsky, Georgy Markovich. Article with a multicolored surface decoration thereon produced by light interference effects. 3,775,263, Cl. 204-18.00r.

Roach, Robert Joseph, to Canadian Industries Limited. Borehole charging apparatus. 3,774,496, Cl. 86-20.00c.

Roberts, Donald L.; and Hege, Bonita P., to Reynolds, R. J., Tobacco Company. 1,3,3-Trimethyl-7-oxabicyclo[4.1.0] heptane-2,5-dione. 3,775,437, Cl. 260-348.00c.

Roberts, Philip Dennis: *See—*
Jennings, James Robert; Roberts, Philip Dennis; and Simon, David Gavin, 3,775,391.

Robertson, Walter W. Valve. 3,774,877, Cl. 251-30.000.

Robinson, Sharon D.: *See—*
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Rocker, Hermann: *See—*
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Rod, Trygve R.: *See—*
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Rodach, Alexander, to Frau Irma Ungerer. Reel for colling strip. 3,774,862, Cl. 242-78.300.

Rode, John E., to Temper Corporation. Dual rate cylindrical spring. 3,774,896, Cl. 267-182.000.

Rodewald, Paul G., to Mobil Oil Corporation. Pyrrolidones from γ-butyrolactones using a zeolite catalyst. 3,775,431, Cl. 260-326.5fl.

Rogers, Howard G., to Polaroid Corporation. Variable light-filtering device. 3,774,988, Cl. 350-150.000.

Rohm G.m.b.H.: *See—*
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Rolls, James A.: *See—*
Georgiana, Joseph M.; Rolls, James A.; Voss, Donald R.; Mierzwa, Anthony M.; and Paradis, Robert A., 3,775,359.

Romans, Gleason, to Aviation Inc. Platform stabilization system. 3,775,656, Cl. 318-649.000.

Romes, Roman: *See—*
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Rondestvedt, Christian S., Jr., to Du Pont de Nemours, E. I., and Company. Aromatic acid chloride process. 3,775,476, Cl. 260-544.00m.

Root, Viotti E. Method and apparatus for simulating the act of walking. 3,774,597, Cl. 128-25.00b.

Rosborne, Jeffrey A., 1/2 to Norris, Jerome J. Scouring article. 3,775,014, Cl. 401-8.000.

Rose, John Brewster: *See—*
Leslie, Victor Jeffrey; Newton, Alan Branford; and Rose, John Brewster, 3,775,368.

Rosenthal, Arnold J.: *See—*
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Ross, Alexander Robert: *See—*
Hensler, Donald Henry; Ross, Alexander Robert; Steidel, Charles Archibald; Trudel, Murray Lawrence; and Zuber, Theodore Wallace, Jr., 3,775,278.

Ross, Hugh C. Solid-state high impedance meter system. 3,775,682, Cl. 324-122.000.

Rossbach, Dennis R.: *See—*
Couch, Robert P.; Rossbach, Dennis R.; Vopalensky, Robert A.; and Fowler, Robert T., 3,775,763.

Rosse, Thomas A.; Blackmer, David E.; Zindler, Jerrold; and Kelley, Thomas F., to Instrumentation Laboratory, Inc. Apparatus for processing chemical materials held in container structures. 3,775,595, Cl. 235-61.60h.

Rosshaupter, Erich: *See—*

Hoffman, Herbert; Rosshaupter, Erich; and Weitze, Arthur, 3,775,117.

Rossi, Irving. Continuous casting apparatus with strand support means. 3,774,671, Cl. 164-282.000.

Roth, Shirley H.; and Green, Joseph, to Cities Service Company. Process for protecting a substrate with a sulfoguanidine intumescent composition. 3,775,166, Cl. 117-136.000.

Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an N^4-pyridylaminoarylsulfonamide intumescent agent. 3,775,167, Cl. 117-136.000.

Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an N^4-pyrimidylamino-arylsulfonamide intumescent agent. 3,775,168, Cl. 117-136.000.

Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an N^4-pyrazylaminoarylsulfonamide intumescent agent. 3,775,169, Cl. 117-136.000.

Rotkowski, Karl; and Kunert, Klaus. Circuit arrangement for centrally controlled telephone exchange installations. 3,775,565, Cl. 179-18.0es.

Roup, Rolland R., to Solid State Dielectrics, Inc. Ceramic composition for high stability capacitors. 3,775,142, Cl. 106-73.310.

Rousse, Robert, to Canron, Inc. Method and apparatus for checking and/or correcting railway tracks. 3,775,618, Cl. 250-209.000.

Rowland, David L. Seating and sub-assembly for seats and backs. 3,774,967, Cl. 297-445.000.

Rowls, Garth A.; and Johnson, Elbert L., to General Motors Corporation. Corrosion-proof battery terminal and cable connector therefor. 3,775,730, Cl. 339-116.00r.

Royal Industries, Inc.: *See—*
McKenney, John D.; and Rumsey, Thomas R., 3,774,679.

Rubaschek, Nathan; and Rubinstein, Henry. Apparatus for forming embossed designs in pile fabrics. 3,774,272, Cl. 26-2.00r.

Rubinstein, Henry: *See—*
Rubaschek, Nathan; and Rubinstein, Henry, 3,774,272.

Rue, Howard M., to Sun Oil Company of Pennsylvania. Rust preventive concrete form release oil. 3,775,340, Cl. 252-389.00a.

Ruegg, Rudolf: *See—*
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Rulleau, Alain: *See—*
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Rumsey, Thomas R.: *See—*
McKenney, John D.; and Rumsey, Thomas R., 3,774,679.

Rundell, Herbert A.; and Davis, James B., to Texaco Inc. Method and apparatus for monitoring the wear on a rotary drill bit. 3,774,445, Cl. 73-151.000.

Rush, William F.: *See—*
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Russell, Ralph Thomas: *See—*
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Russell, Robert G., to Owens-Corning Fiberglas Corporation. Method and apparatus for processing glass and forming fibers therefrom. 3,775,074, Cl. 65-2.000.

Rust, John B.; and Smolker, Gary S., to Hughes Aircraft Company. Electrolytic anticompromise process. 3,775,274, Cl. 204-146.000.

Rutgerswerke Aktiengesellschaft: *See—*
Jellinek, Karl; Post, Udo; Gerlach, Dieter; and Oellig, Rudi, 3,775,355.

Ruyle, William V.: *See—*
Shen, Tsung-Ying; Ruyle, William V.; Fordice, Michael W.; and Jensen, Norman P., 3,775,403.

Ryabov, Valentin Ignatievich: *See—*
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Ryan, Arthur J.: *See—*
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Ryerson, Joseph L., to Broomfield Ryerson Research Corporation. Lithium storage cells with a fused electrolyte. 3,775,181, Cl. 136-6.0lf.

S.A. Brush Company Limited: *See—*
Smyth, Donald N.; and Heard, Bruce A., 3,774,257.

S.A. Distrigaz N.V.: *See—*
Ribesse, Jacques Max, 3,774,673.

Saab-Scania Aktiebolag: *See—*
Gustavsson, Bengt Henrik, 3,774,710.

Sabourin, Edward T.: *See—*
Ellis, Alan F.; and Sabourin, Edward T., 3,775,509.

Sachs, Carrol C. Production of polymer-inorganic foam. 3,775,351, Cl. 260-2.501.

Sacrini, Egeo; and Cavallotti, Claudio, to Goodrich, B. F., Company, The. Organic tetraperoxides. 3,775,465, Cl. 260-475.0sc.

Sadamatsu, Shigeru; and Kaneko, Hiroyuki, to Fuji Photo Film Co. Electrophotographic material and process for producing same. 3,775,103, Cl. 96-1.00r.

Safiuddin, Mohammed, to Westinghouse Electric Corporation. Sensing system for cut-to-length shear. 3,774,488, Cl. 83-293.000.

Saha, Narayan C.; and Daghe, Joseph, to Mueller Co. Line stopping assembly using an inflatable element. 3,774,647, Cl. 138-94.000.

Sahagun, Armen N. Method to produce high concentrations of dopant in silicon. 3,775,197, Cl. 148-188.000.

Saito, Katsutoshi: *See—*
Tagashira, Hiroshi; and Saito, Katsutoshi, 3,775,616.

Saito, Shigeru, to Masudaya Toy Co., Ltd. Spring type projecting device with revolvable magazine. 3,774,586, Cl. 124-29.000.

Saito, Tsutomu: *See—*
Tsunoda, Norimasa; and Saito, Tsutomu, 3,775,015.

Saitou, Kenya: *See—*
Takashima, Yoichi; Endo, Yoshitami; and Saitou, Kenya, 3,774,376.

Sakai, Akira; and Teranishi, Tsugutomo, to Hitachi, Ltd. Method and apparatus for restarting boiler feed-water pump system. 3,774,579, Cl. 122-1.00c.

Sakaura, Seiko: *See—*
Iwasaki, Hajime; Shimizu, Teiichi; and Sakaura, Seiko, 3,775,212.

Sakurai, Tetsuo: *See—*
Sano, Ichiro; Karasawa, Sinji; and Sakurai, Tetsuo, 3,775,583.

Salbego, Emil John. Process for treating fragmented soybeans and product made therefrom. 3,775,542, Cl. 99-8.000.

Sama, Jugal Kishore: *See—*
Mukherjee, Dilip Kumar; Chowdhury, Priya Bandhu; Sama, Jugal Kishore; Basu, Amarendra Nath; Basak, Nitya Goral; and Lahiri, Adinath, 3,775,286.

Sample, Peter, to Solartron Electronic Group Limited, The. Apparatus for generating an electrical output signal of variable frequency. 3,775,665, Cl. 321-61.000.

Sampson, Roy John; Spencer, Christopher Buxton; and Nirula, Satish Chandra, to Imperial Chemical Industries Limited. Production of benzene. 3,775,504, Cl. 260-672.00r.

Samputensill S.p.A.: *See—*
Occhialini, Carlo; and Tattini, Caludio, 3,774,313.

Sande, Andrew. Candle snuffer. 3,775,037, Cl. 431-144.000.

Sander, Bruno, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of oxylmethylene polymers. 3,775,370, Cl. 260-67.0fp.

Sanders, Dickerson H. Poultry enclosure. 3,774,577, Cl. 119-17.000.

Sanders, Duane V., to Systematic Multi-Level Parking Company. Automobile parking apparatus. 3,774,793, Cl. 214-130.000.

Sanderson, Michael D., to Wilkinson Sword, Limited. Razor blades and methods of manufacture thereof. 3,774,703, Cl. 117-75.000.

Sandorf, Robert E.: *See—*
Algeri, Harvey R.; and Sandorf, Robert E., 3,775,624.

Sandoz Ltd. (a/k/a Sandoz AG): *See—*
Trueb, Werner, 3,775,406.

Sano, Ichiro; Karasawa, Sinji; and Sakurai, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Device for interconnecting plates between adjacent cells of storage battery. 3,775,583, Cl. 219-127.000.

Sansui Electric Co., Ltd.: *See—*
Katoh, Tomomi; Aono, Masayasu; and Fujinami, Toshio, 3,774,980.

Santilli, Arthur A.: *See—*
Kim, Dong H.; and Santilli, Arthur A., 3,775,412.

Santley, William L.: *See—*
Jurd, Leonard; King, A. Douglas, Jr.; and Santley, William L., 3,775,540.

Santore, Nicholas T.: *See—*
Depuy, Francis A.; and Santore, Nicholas T., 3,774,271.

Sanyo Electric Co., Ltd.: *See—*
Toda, Hiroshi, 3,775,632.

Sarkes Tarzian, Inc.: *See—*
Valdettaro, Afarico A., 3,774,459.

Sarno, Dante H., to Shell Oil Company. Isoprene recovery process by plural extractive distillations. 3,775,259, Cl. 203-54.000.

Sasajima, Yoichi: *See—*
Matsuda, Shinji; Kuwabara, Hidemitso; Kubo, Hiroshi; Sasajima, Yoichi; Suzuki, Kensuke; and Fukamachi, Takashi, 3,775,549.

Sasaki, Rentaro; Watanabe, Akinori; Ogasawara, Tatsuo; and Watanabe, Satoshi, to Oki Electric Industry Company Ltd. and Okaya Electric Industry Company. Cold cathode discharge apparatus with memory functions. 3,775,633, Cl. 313-217.000.

Sasaki, Tetsuo: *See—*
Taguchi, Masahiro; and Sasaki, Tetsuo, 3,774,954.

Sato, Hisanao: *See—*
Yamamoto, Ryoichi; Ohoshima, Nobumasa; Sato, Hisanao; Kawarada, Hiroshi; and Yamazoe, Hiroshi, 3,775,173.

Sato, Hisatake: *See—*
Hayashi, Hideo; Sato, Hisatake; and Mizuno, Yusaku, 3,775,381.

Sato, Masaki; Makita, Hiromitsu; and Toyota, Noriyuki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for production of panel heater. 3,774,299, Cl. 29-611.000.

Sato, Masamichi; and Takahashi, Isoji, to Fuji Photo Film Co., Ltd. Development device for electrophotography. 3,774,574, Cl. 118-637.000.

Saunders Valve Company Limited: *See—*
Bentley-Leek, Herbert, 3,774,277.

Savkar, Anil D.: *See—*
Chao, Chester C.; Lange, Lawrence K.; Lindbloom, Eric; and Savkar, Anil D., 3,775,598.

Scannell, James Parnell: *See—*
Berger, Julius; Pruess, David; and Scannell, James Parnell, 3,775,255.

Scantilin, John R., to Transaction Technology, Inc. Apparatus and method of coding information. 3,775,755, Cl. 340-172.500.

Scaramucci, Antonietta: *See—*
De Simone, Renato; Beranger, Alessandro; and Scaramucci, Antonietta, 3,775,493.

Schabert, Hans-Peter, to Siemens Aktiengesllschaft. Safety device for pressure vessels, particularly of the type associated with nuclear reactors. 3,775,251, Cl. 176-87.000.

Schachnow, Stanley; and Siegler, Frederick J., to Elco Corporation. Support assembly for plugged in PC card comprising self-mountable channels with plastic liners. 3,775,643, Cl. 317-101.0dh.

Schaeffer, Robert A.; White, William T.; and Corialo, Samuel D., to Xerox Corporation. Optical scanning apparatus. 3,775,008, Cl. 355-18.000.

Schaible, Clifford Warren: *See—*
Di Piazza, Gerald Charles; Onno, Peter; Oswald, Henry; and Schaible, Clifford Warren, 3,775,765.

Schaper, Barbara J.: *See—*
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Scharfe, Gerhard: *See—*
Kronig, Walter; and Scharfe, Gerhard, 3,775,342.

Scherbaum, Karl, to VEB Steremat "Hermann Schlimme". Miniature electrode clamp and guide for electric-spark machining. 3,775,580, Cl. 219-69.00e.

Scherer, James P., to Textron, Inc. Flush mounted backfire circularly polarized antenna. 3,775,771, Cl. 343-770.000.

Schichman, Daniel, to Uniroyal, Inc. Jet tuft rib knitted fabric. 3,774,412, Cl. 66-9.00r.

Schiesterl, Gerhard, to Daimler-Benz Aktiengesellschaft. Safety steering. 3,774,932, Cl. 280-87.00r.

Schinner, Thomas J.: *See—*
Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; and Singer, Paul A., 3,775,593.

Schlafhorst & Co.: *See—*
Derichs, Josef, 3,774,415.

Schlesinger, Sheldon Irwin, to American Can Company. Image production using photosensitive compositions of nitrone which is heat developed. 3,775,122, Cl. 96-48.0hd.

Schlicht, Richard C.: *See—*
Greer, Walter D.; and Schlicht, Richard C., 3,774,430.

Schlitz, Jos., Brewing Company: *See—*
Hetchler, Neal F., 3,774,747.

Schloemann Aktiengesellschaft: *See—*
Pauels, Heinrich, 3,774,433.

Schlumberger Technology Corporation: *See—*
Frentrop, Arthur H., 3,775,216.

Schmalfeld, Paul; Hahn, Helmut; Lehmann, Joachim; and Kleisa, Kurt, to Metallgesellschaft Aktiengesellschaft Bergwerksverband GmbH. Process and apparatus for cooling hot briquettes. 3,774,315, Cl. 34-13.000.

Schmidt, Herbert, to ITT Industries, Inc. Brake system for the trailer of a tractor-trailer combination. 3,774,975, Cl. 303-7.000.

Schmidt-Hatting, Wolfgang, to Swiss Aluminum. Plant for production of aluminum by electrolysis. 3,775,281, Cl. 204-244.000.

Schmiesing, Gregory. Draw bar hitch. 3,774,943, Cl. 280-479.00r.

Schmitz, Franz-Josef: *See—*
Wegerhoff, Arno; Schmitz, Franz-Josef; and Macura, Carl, 3,775,446.

Schmitz, Frederick William, to Commercial Solvents Corporation. Pellet implant gun. 3,774,607, Cl. 128-217.000.

Schmuck, Peter, to Hilti-Aktiengesellschaft. Gear and lock hammer drill with slidable rotation. 3,774,699, Cl. 173-48.000.

Schneider, Klaus: *See—*
Mindner, Reinhard; Adler, Karl-Heinz; Flaschar, Heinz; and Schneider, Klaus, 3,774,641.

Schneider, Marshall C., to Burns, Charles D., Co. Display device for photographs and the like. 3,774,332, Cl. 40-152.100.

Scholl, Hans; and Fischer, Jochen, to Koch Adler AG. Template for sewing devices. 3,774,558, Cl. 112-121.120.

Scholz, Manfred; and Wakonig, Freidrich, to Siemens Aktiengesellschaft. Device for suspending and supporting a reactor pressure vessel in a nuclear power plant. 3,775,250, Cl. 176-87.000.

Schone, Henry L.: *See—*
Schone, Henry L.; Geer, William W.; Laxineta, Stephen C.; and Koistinen, Clayton W., 3,774,825.

Schone, Henry L.; Geer, William W.; Laxineta, Stephen C.; and Koistinen, Clayton W., to Schone, Henry L. and said Laxineta and said Koistinen assors. to said Geer, William W. Back pack for underwater breathing apparatus and the like. 3,774,825, Cl. 224-25.0a.

Schoonover, John R.; and Northrip, Patrick M. Door construction. 3,774,341, Cl. 49-200.000.

Schott, Charles M., Jr., to Gloucester Engineering Co., Inc. Machine for perforating and heat sealing a web including an elongated element with a multiplicity of drivers. 3,775,225, Cl. 156-510.000.

Schrader, Dieter, to Therachemie Chemisch Therapeutische Gesellschaft. Thiocarbamide dioxides, complexing agents and oxidation dyes and hair dyeing therewith. 3,775,044, Cl. 8-11.000.

Schreiner, Horst; and Fidos, Henryk, to Siemens Aktiengesellschaft. Method of producing tin layers or tin alloy layers on copper or copper alloy wires by hot tin plating. 3,774,427, Cl. 72-47.000.

Schuler, Roland: *See—*
Ganger, Bertold; and Schuler, Roland, 3,775,686.

Schulze, Erwin F. C., to Addressograph-Multigraph Corporation. Sheet separator with increased pocket opening. 3,774,902, Cl. 270-58.000.

Schumacher, William Ludlow, to AMP Incorporated. Miniature coaxial cable assembly. 3,775,552, Cl. 174-105.00r.

Schumann, Joseph M.: *See—*
Corbin, John Alphonso S.; Schumann, Joseph M.; Watson, D. E.; and Stayboldt, Paul J., 3,774,591.

Schurig, Robert E.; and Korn, Joseph, to Sonic Development Corporation of America. Pressure wave atomizing apparatus. 3,774,846, Cl. 239-102.000.

Schwartzman, Gilbert. Surgical preparatory applicator. 3,774,609, Cl. 128-269.000.

Schwarze, Werner: *See—*
Wolff, Siegfried; Westlinning, Hermann; Schwarze, Werner; and Sroka, Werner, 3,775,366.

Schweitzer, Andrew N., to Tappan Company, The. Dishwasher water tower. 3,774,626, Cl. 134-179.000.

Schweizer, Gottfried: *See—*
Smolka, Thomas Gordon; and Schweizer, Gottfried, 3,774,922.

Sciaky, Albert M., to Welding Research, Inc. Seam tracking method. 3,775,581, Cl. 219-121.0em.

Scitron Corporation: *See—*
Woods, James Robert, Jr.; and White, Roy Matison, Jr., 3,774,613.

Scorpion, Inc.: *See—*
Harris, Marvin W., 3,774,979.

Scotto, Victor E.; and Blackwelder, Maurice W., to Owens-Illinois, Inc. Foam plastic extrusion apparatus with plurality of die lip temperature controls. 3,775,035, Cl. 425-141.000.

Scragg, Ernest, & Sons Limited: *See—*
Bowler, Peter; and Nir, Benjamin, 3,775,652.

Searle, G. D., & Co.: *See—*
Chinn, Leland J., 3,775,486.

Sears, Roebuck, and Company: *See—*
Duncan, Alan W., 3,774,947.

Seatech Engineering, Inc.: *See—*
Krammer, Robert, 3,774,546.

Seefluth, Charles L., to Phillips Petroleum Company. Selective parison heating for oriented generally oval-shaped hollow articles. 3,775,524, Cl. 264-97.000.

Seiden Myron A.; and Barr, Charles A., to Polaroid Corporation. Twin lens camera optical system adjustment module. 3,774,512, Cl. 95-18.00r.

Seidler, David; and Feldman, Herbert B. Urine testing apparatus. 3,774,455, Cl. 73-444.000.

Seifert, Eberhard: *See—*
Braun, Josef; and Seifert, Eberhard, 3,774,651.

Seifert, Peter, to Black Clawson Fibreclaim, Inc., mesne. Pulping apparatus for waste material. 3,774,853, Cl. 241-46.110.

Seiko Koki Kabushiki Kaisha: *See—*
Kitai, Kiyoshi; Koyama, Mitsuo; Kato, Shogo; Takazawa, Yuzuru; and Nagaoka, Shinji, 3,774,458.

Seitel, Heinz, to Telesco Brophey Limited. Longitudinally collapsible umbrella. 3,774,627, Cl. 135-20.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Sadao; Honda, Seiichirou; Shimizu, Hisataka; and Oguma, Kanzi, 3,775,521.

Selden, Boynton. Stretch and roll frame for canvas needlework. 3,774,326, Cl. 38-102.400.

Sellstedt, John H.; Bell, Stanley C.; and McCaully, Ronald J., to American Home Products Corporation. 5,6,7,8-Tetrahydro-2,5 (and 4,5) -dioxo-1-benzopyrans. 3,775,435, Cl. 260-345.200.

Semmes, Ignatius W.; and Simpson, Charles B., to United States of America, Air Force. External slurry injection for infrared enhancement of exhaust plume. 3,774,871, Cl. 244-136.000.

Senee, Esther E. Finger nail inspection unit. 3,774,993, Cl. 350-243.000.

Shah, Indravadan S., to Chemical Construction Corporation. Removal of sulfur dioxide from gas streams. 3,775,532, Cl. 423-242.000.

Shaper, Roger T.; Germann, John E.; and Richardson, Jerry J., to El Patio Products Corporation. Shock resistant gas light. 3,775,608, Cl. 240-90.000.

Sharp, Donald Jex, to Western Electric Company, Incorporated. Method of selectively depositing a metal on a surface of a substrate. 3,775,121, Cl. 96-38.400.

Shaw, Joseph Denman. Sterile packages for fragile articles. 3,774,454, Cl. 73-444.000.

Sheetz, Richard S., to Park-Ohio Industries, Inc. Method for quench hardening elongated workpieces. 3,775,195, Cl. 148-153.000.

Sheffield, Harold B.; and Reiter, Abraham M., to Gulf & Western Industries Inc. Emergency activating apparatus. 3,774,870, Cl. 244-122.00b.

Shell Oil Company: *See—*
Eckert, Rudolf J. A., 3,775,329.
Holm, Roy T.; Morris, Rupert C.; and Hayden, James W., 3,775,475.
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Shen, Tsung-Ying: *See—*
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Shen, Tsung-Ying; Ruyle, William V.; Fordice, Michael W.; and Jensen, Norman P., to Merck & Co., Inc. Diphenyl sulfones. 3,775,403, Cl. 260-239.800.

Shepherd, William L., to Hughes Tool Company. Interconnected lubricant system for impact tool. 3,774,700, Cl. 173-119.000.

Sherratt, Jack, to Mihalcheon, Arthur. Method of dislodging dead grass from a lawn. 3,774,378, Cl. 56-1.000.

Sherrill, John B.; Bruchon, Paul E.; Phillips, James T.; and Currence, John L., Jr. Loom linkage connector. 3,774,650, Cl. 139-151.000.

Sherritt Gordon Mines Limited: *See—*
Gulyas, James W.; and O'Kane, Patrick T., 3,775,095.
Kunda, Wayl; and Hitesman, Roderick Herbert, 3,775,098.
O'Kane, Patrick T.; Weir, Donald Robert; and Mackiw, Vladimir N., 3,775,090.

Sherwin-Williams Company, The: *See—*
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Shibasaki, Masataka; Matsubara, Mitsuru; Ohnogi, Jiro; and Shibata, Keijiro, to Tanabe Seiyaku Co., Ltd. Diastereoisomeric salts of 3,4-(1,3-dibenzyl-2-oxo-imidazolido)-2-oxo-5-hydroxy-tetrahydrofuran. 3,775,413, Cl. 260-284.000.

Shibasaki, Masuo: *See—*
Takenobu, Mareo; Yoshida, Takashi; Masuda, Hiroshi; Takahashi, Kenya; Fujioka, Kenji; Miura, Kansuke; Shibasaki, Masuo; and Yamamoto, Tetsuo, 3,775,491.

Shibata, Keijiro: *See—*
Shibasaki, Masataka; Matsubara, Mitsuru; Ohnogi, Jiro; and Shibata, Keijiro, 3,775,413.

Shibata, Norio, to Victor Company of Japan, Limited. Phonograph pickup stylus. 3,774,918, Cl. 274-38.000.

Shichman, Daniel: *See—*
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Shida, Sankichi: *See—*
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Shiga, Tsuyoshi: *See—*
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Shiiki, Zenya: *See—*
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Shimanckas, William J.: *See—*
Borst, Gaylord M.; and Shimanckas, William J., 3,774,568.

Shimanckas, William J., to Outboard Marine Corporation. Outboard motor steering arrangement. 3,774,571, Cl. 115-18.00r.

Shimizu, Hisataka: *See—*
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Shimizu, Kitao: *See—*
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Shimizu, Sakae: *See—*
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Usui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,775,108.

Shimizu, Shigenari: *See—*
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Shimizu, Teiichi: *See—*
Iwasaki, Hajime; Shimizu, Teiichi; and Sakaura, Seiko, 3,775,212.

Shimizu, Toyotaro; and Mizuno, Ken Ichi, to OJI Paper Co., Ltd. Safety device for a system of hydraulically transporting solid matters. 3,774,971, Cl. 302-15.000.

Shimizu, Yoshiyuki, to Nippon Kogaku K.K. Achromatic telephoto objective lens. 3,774,991, Cl. 350-215.000.

Shimotsuma, Teruo: *See—*
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Shinetsu Chemical Company: *See—*
Koyangi, Shunichi; Ogawa, Kinya; and Taguchi, Kenichi, 3,775,395.

Shionogi & Co., Ltd.: *See—*
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Shirasu, Hirotoshi: *See—*
Akimaro, Haruo; Yamamoto, Koichi; Muroga, Ko; Shirasu, Hirotoshi; Araki, Noboru; and Nakajo, Toshihiko, 3,775,566.

Shirasu, Kazuo; Ozawa, Mitsuo; and Ogawa, Yasuhisa, to Fuji Photo Film Co., Ltd. Stabilizing method and composition for color photographic processing. 3,775,124, Cl. 96-56.000.

Shizuoka Match Co., Ltd.: *See—*
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Shkuta, Eduard Ivanovich: *See—*
Plotkin, Nakhman Zalmanovich; Kulikov, Yakov Pavlovich; Loginov, Vladimir Ivanovich; Tsukanov, Georgy Emmanuilovich; Shkuta, Eduard Ivanovich; Statkevich, Artem Alexandrovich; and Ivanaevsky, Vikenty Ivanovich, 3,774,891.

Shue, Robert S., to Phillips Petroleum Company. Olefin arylation and olefin coupling in the presence of palladium carboxylates. 3,775,511, Cl. 260-669.00r.

Shum, Yick-Mow: *See—*
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Shur Brite Wax-O-Matic, Inc., mesne: *See—*
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Siddall, John B.; and Henrick, Olive A., to Zoecon Corporation. Epithio dienamides. 3,775,432, Cl. 260-327.00e.

Siefert, Gerhard: *See—*
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Siegart, William R.: *See—*
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Siegler, Frederick J.: *See—*
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Siemens Aktiengesellschaft: *See—*
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Sievenpiper, Franklin: *See—*
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SIG Schweizerische Industrie Gesellschaft: *See—*
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Simmons, Harold C., to Parker-Hannifin Corporation. Fuel head compensating valve for fuel injection nozzle. 3,774,851, Cl. 239-551.000.

Simms Group Research & Development Limited: *See—*
Phillips, Ronald; and Miracki, Zdzislav Stanislav, 3,774,411.

Simms, Romilly J., to Monitor Technology, Inc. Optical turbidimeter apparatus. 3,775,013, Cl. 356-208.000.

Simon, David Gavin: *See—*
Jennings, James Robert; Roberts, Philip Dennis; and Simon, David Gavin, 3,775,391.

Simon, Horst: *See—*
Ettlacher, Helmut; Ort, Wolfgang; Simon, Horst; and Steisslinger, Kurt, 3,774,513.

Simpson, Charles B.: *See—*
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Simpson, Robert A.: *See—*
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Singer, Barnet. Plaque. 3,774,884, Cl. 256-32.000.

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Sjoman, Carl F.; Wilson, Clyde R.; Montoya, John L.; and Bullett, Casper L., to Team Industries. Apparatus for folding T-shirts. 3,774,903, Cl. 270-66.000.

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Smith, Dwight K.; and Lane, Carl A., to Halliburton Company. Method for stabilizing bore holes. 3,774,683, Cl. 166-293.000.
Smith, Edward A., to GAF Corporation. Liquid filter pressurized apparatus. 3,774,769, Cl. 210-232.000.
Smith, Edward M., to Gorman-Rupp Company, The. Adjustable driving mechanism for variable output pumps. 3,774,461, Cl. 74-49.000.
Smith, Forest D., to Electric Machinery Mfg. Company. Voltage regulator for synchronous generators. 3,775,666, Cl. 322-28.000.
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Smith, James W., to Corning Glass Works. Adding lead magensium niobate to lead titanate/lead zirconate to aid hot pressing to transparency. 3,775,531, Cl. 264-332.000.
Smith, John J.; deceased (by Smith, Beatrice A.; executrix), to Mueller Co. Line stopping assembly using an inflatable element. 3,774,646, Cl. 138-93.000.
Smith, Joseph E.; DeTroyer, Georges D.; and DeSantis, Raymond P., to Wolverine-Pentronix, Inc. Powder compacting apparatus. 3,775,032, Cl. 425-78.000.
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Smith, Richard Glenn, to Sherwin-Williams Company, The. Glossy emulsion coating compositions containing surface treated pigments of oilophilic nature and method. 3,775,360, Cl. 260-24.000.
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Smith, Stephen B., to National Cash Register Company, The. Microform positioning carrier. 3,775,003, Cl. 353-23.000.
Smith, Tom R., to American Air Filter Company, Inc. Pocket type filter. 3,774,375, Cl. 55-382.000.
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Sneider, Vincent R. Stocking pair retainer. 3,774,267, Cl. 24-81.00d.
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Snyder, Jack T.; McLarty, Donald M.; and Kenley, Stephen L., to United States of America, Air Force. Explosive bonding of tubes to fittings. 3,774,291, Cl. 29-421.000.
Snyder, Richard C.; and Wold, Harold A., to Pullman Incorporated. Railroad car construction with belt rail design. 3,774,552, Cl. 105-369.00b.
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Sparham, Vaughan; and Pinner, Gordon Frederick, to British Wedge Wire Company Limited. Sedimentation tanks. 3,774,770, Cl. 210-298.000.
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Streckert, Ernest H. Automatic veneer measuring and clipping control system. 3,774,750, Cl. 198-110.000.
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Ochiai, Michihiko; Aki, Osami; Morimoto, Akira; Okada, Taiiti; and Masuda, Katsutada, 3,775,408.
Takemoto, Takeo; and Tomita, Yoshifumi, to Hitachi, Ltd. Method for making a phosphor screen of a cathode-ray tube. 3,775,116, Cl. 96-36.100.
Takenobu, Mareo; Yoshida, Takashi; Masuda, Hiroshi; Takahashi, Kenya; Fujioka, Kenji; Miura, Kansuke; Shibasaki, Masuo; and Yamamoto, Tetsuo, to Central Glass Co., Ltd. Processes for producing polychlorinated ethanes and polychlorinated ethylenes. 3,775,49, Cl. 260-654.00d.
Tamai, Yasuo; and Osawa, Sadao, to Fuji Photo Film Co., Ltd. Electrophotographic process. 3,775,106, Cl. 96-1.200.
Tanabe Seiyaku Co., Ltd.: *See—*
Shibasaki, Masataka; Matsubara, Mitsuru; Ohnogi, Jiro; and Shibata, Keijiro, 3,775,413.
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Tanaka, Masahisa: *See—*
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Tandon, Tej Narayan; Lal, Saneja Iundar; and Bhan, Sharma Chandra. Universal automatic coupler. 3,774,776, Cl. 213-100.00w.
Tanner, Ernest E. Shore line boat anchor. 3,774,361, Cl. 52-162.000.
Tanney, Oliver Morley, to Goodren Products Corporation. Display arrangement. 3,774,328, Cl. 40-10.00r.
Tappan Company, The: *See—*
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Tardos, Laszlo: *See—*
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Taylor, Donald M. Polishing spindle. 3,774,354, Cl. 51-358.000.
Taylor, Eugene D.: *See—*
Taylor, Eugene D.; and Swisher, Willis R. (said Swisher assor. to said), 3,774,480.
Taylor, Eugene D.; and Swisher, Willis R., said Swisher assor. to said Taylor, Eugene D. Apparatus for rotating valves on gas cylinders. 3,774,480, Cl. 81-53.00r.
Taylor, Ian Charles: *See—*
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Taylor, Ted R.; and Fergason, James L., to International Liquid Xtal Company. Liquid crystal memory, system utilizing the memory and methods of constructing and operating such a memory. 3,775,757, Cl. 340-173.01s.
Team Industries: *See—*
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Teledyne, Inc.: *See—*
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Teledyne Industries, Inc.: *See—*
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Thom, Kenneth C., to Kaufmann Window and Door Corporation. Sliding screen door. 3,774,342, Cl. 49-420.000.

Thomas, Alan, to Lucas, Joseph, (Industries) Limited. Fluid pressure transducers. 3,774,451, Cl. 73-398.00c.

Thomas, Gordon D., to Kimberly-Clark Corporation. Multiple embossed flexible web. 3,775,231, Cl. 161-57.000.

Thompson, Darrell R., to Du Pont de Nemours, E. I., and Company. Dispersions containing polyesters with terminal polyhydroxyl groups. 3,775,327, Cl. 252-62.540.

Thompson, James B. Valve actuator. 3,774,462, Cl. 74-89.150.

Thompson, John T.; and Gillemot, George W. Method of gasketing the mating surface of housing parts and entryways for electrical conductors. 3,775,204, Cl. 156-53.000.

Thompson, Norman W.: *See—*
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Thompson, Sheldon L., to Sun Research and Development Co. Preparation of 2,6-dimethylnaphthalene and 2,7-dimethylnaphthalene. 3,775,496, Cl. 260-668.00f.

Thompson, Sheldon L., to Sun Research and Development Co. Preparation of 2,3-dimethylnaphthalene. 3,775,497, Cl. 260-668.00f.

Thompson, Sheldon L., to Sun Research and Development Co. Preparation of 2,6-dimethylnaphthalene. 3,775,498, Cl. 260-668.00f.

Thompson, Sheldon L., to Sun Research and Development Co. Preparation of 2,7-dimethylnaphthalene. 3,775,500, Cl. 260-668.00f.

Thomson-C&F: *See—*
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Thorpe, Irvin I. Sheet metal cover for a truck body. 3,774,958, Cl. 296-98.000.

Thorsie, Fleming, to Danfoss A/S. Thermal starting device for a single-phase asynchronous motor. 3,775,650, Cl. 318-221.00h.

Three Bond Co., Ltd.: *See—*
Ozono, Masayoshi; and Suzuki, Masakatsu, 3,775,385.

T.I. (Group Services), Limited: *See—*
Marsh, David Malcolm, 3,775,011.

Tidland Corporation: *See—*
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Tidman, Derek A., to Versar Inc. Establishing highly conductive path in gas by thermal guidance of discharge. 3,775,638, Cl. 315-36.000.

Tillman, Vincent J.: *See—*
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Titone, Seymour C., to Techniprises Company. Machine knitting. 3,774,416, Cl. 66-87.000.

Tobey, Hobert E.; Moller, George O.; and Twiford, Richard L., to International Telephone and Telegraph Corporation. Apparatus for oblong products. 3,774,749, Cl. 198-33.40b.

Toda, Hiroshi, to Sanyo Electric Co., Ltd. Concealed auxiliary cathode for figure illuminating discharge tube. 3,775,632, Cl. 313-109.500.

Tokyo Institute of Technology, President of: *See—*
Takai, Hiroyuki; Hasegawa, Kensuke; and Nakano, Michio, 3,775,657.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
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Topliffe, Doris H. Dough slicer. 3,774,487, Cl. 83-278.000.

Toray Industries, Inc.: *See—*
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Torii, Michihiro: *See—*
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Toyota Jidasha Kogyo Kabushiki Kaisha: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Transformatoren Union Aktiengesellschaft: *See—*
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Triebel, Wolfgang; and Durr, Manfred, to Polysius Aktiengesellschaft, mesne. Rotary kiln with a plurality of cooling pipes. 3,775,042, Cl. 432-80.000.

Trionics, Inc.: *See—*
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Trudel, Murray Lawrence: *See—*
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Trueb, Werner, to Sandoz Ltd. (a/k/a Sandoz AG). Benzaldoxime-(5-triazinyl)-ethers. 3,775,406, Cl. 260-240.00g.

Trumble, Terry M., to United States of America, Air Force. Gas multiplication ultraviolet detector system for fire detection. 3,775,762, Cl. 340-228.00r.

Trusselle, William H. Container-filling apparatus. 3,774,655, Cl. 141-46.000.

TRW Inc.: *See—*
Bhatia, Vijay H.; and Clendenen, Harold K., 3,774,466.

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Tsukamoto, Masao; and Munehiro, Tomiji, to Matsushita Electric Industrial Co., Ltd. Electronic musical instrument employing a sampling system as a coupler. 3,775,545, Cl. 84-1.010.

Tsukanov, Georgy Emmanuilovich: *See—*
Plotkin, Nakhman Zalmanovich; Kulikov, Yakov Pavlovich; Loginov, Vladimir Ivanovich; Tsukanov, Georgy Emmanuilovich; Shkuta, Eduard Ivanovich; Statkevich, Artem Alexandrovich; and Ivanaevsky, Vikenty Ivanovich, 3,774,891.

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Tullos, Aubrey R.; and Dewitt, Ray. Helical coil bourdon tube support assembly. 3,774,452, Cl. 73-418.000.

Tuohey, Paul F.: *See—*
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Turnbull, Fred G., to General Electric Company. Inverter with electronically controlled neutral terminal. 3,775,663, Cl. 321-9.00a.

Turner, Abner B., to Westinghouse Electric Corporation. Compact incinerator. 3,774,555, Cl. 110-8.00r.

Turner, Abner B., to Westinghouse Electric Corporation. Apparatus for treating industrial and domestic waste waters. 3,774,768, Cl. 210-199.000.

Turner, H. R., (Willenhall), Limited: *See*—
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Turner, Harold Roy, to Turner, H. R., (Willenhall), Limited. Mechanisms for reclinable seats. 3,774,964, Cl. 297-366.000.

Turnquest, Byron W.; Chao, Tay S.; and Broman, Victor E., to Atlantic Richfield Company. Lubricating oil composition. 3,775,324, Cl. 252-42.700.

Tussey, Jimmy D.; and Oakes, George W. Stabilized contamination free surgical evacuator. 3,774,611, Cl. 128-278.000.

Tuvell, Melvin E.; Yancey, Charlie F.; and Gorsich, Richard D., to Ethyl Corporation. Detergent formulative containing alkyl polyethoxy sulfate mixtures. 3,775,349, Cl. 252-547.000.

Tviksta, Evald, to LaSalle Steel Company. Device for metal treatment. 3,774,436, Cl. 72-342.000.

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Uchida, Kenji: *See*—
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Uhtenwoldt, Herbert Rudolf; and Hatstat, Robert Gordon, to Cincinnati Milacron-Heald Corporation. Grinding machine. 3,774,349, Cl. 51-165.910.

Ujiie, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Method and apparatus for manufacturing bent pipes. 3,774,667, Cl. 164-52.000.

Ulm, Ralph E.; Phillips, Claude F.; Sullivan, Michael J.; Collins, Larry C.; and Parrent, William Russell, to Airtex Products, division of United Industrial Syndicate. Submersible fuel pump. 3,775,024, Cl. 415-211.000.

Ulrich, Bergmeyer Hans: *See*—
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United States National Bank of Oregon: *See*—
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Urano, Fumio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens and sight adjustor for camera view finder. 3,774,994, Cl. 350-252.000.
U.S. Philips Corporation: *See*—
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De Nobel, Dirk; and Kock, Hendrikus Gerardus, 3,775,200.
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Van Der Aa, Herman Henricus Maria. Device comprising a liquid-supported rolling diaphragm seal. 3,774,506, Cl. 92-83.000.
Van der Lely, Ary; and Bom, Cornelis Johannes Gerardus. Cultivator and tractor combinations. 3,774,688, Cl. 172-39.000.
Van der Lely, Ary; and Bom, Cornelis Johannes Gerardus. Fine cultivators with support shields. 3,774,689, Cl. 172-112.000.
Van der Lely, Cornelis. Soil cultivators. 3,774,687, Cl. 172-49.000.
Van Haaren, Wilhelmus Petrus Josephus: *See*—
Visser, Reier; Bormans, Jozef Marie Jacobus; Van Haaren, Wilhelmus Petrus Josephus; and Homan, Douwe Meindert, 3,775,140.
Van Hees, Adrian: *See*—
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Van Paassen, Nicolaas A. I., to Chem-y, Fabriek Van Chemische Produkten N.V. Detergent compositions for carpets and the like. 3,775,052, Cl. 8-137.000.

Van Sloun, Peter H.; and Pearlstein, Burton A., to United States of America, Air Force. Flux gate gradiometer using a pulse generator to drive the energizing windings as well as actuate the detector. 3,775,674, Cl. 324-43.00g.

Van Tongelen, Marcel: *See—*
Debus, Henri Robert; Van Tongelen, Marcel; and Cahen, Raymond M., 3,775,495.
Debus, Henri Robert; Van Tongelen, Marcel; and Cahen, Raymond M., 3,775,499.

Vanbragt, Willy H.: *See—*
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Vanco, Inc.: *See—*
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Vander Noordaa, Roelant S. L.: *See—*
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Vanderhoof, Frank B.: *See—*
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Vanderveen, John E., to United States of America, Air Force. Beverage feeding apparatus for use with full pressure suit. 3,774,813, Cl. 222-211.000.

Vandervell Products, Limited: *See—*
Singer, Alfred Richard Eric, 3,775,156.

Vandewalle, Jan Joseph Maurice: *See—*
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Varty, William M.: *See—*
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Vater, Wulf: *See—*
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Vaughan Co., Inc.: *See—*
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Vaughan, David E. W.; Maher, Philip K.; and Albers, Edwin W., to Grace, W. R., & Co. Amorphous inorganic gel. 3,775,345, Cl. 252-453.000.

Vaughan, John Melville Graham Powell: *See—*
Day, John Anthony; and Vaughan, John Melville Graham Powell, 3,774,263.

Vaughen, Jack F. Antidrift mechanism for an air cushion vehicle. 3,774,716, Cl. 180-119.000.

Vaughn, James E., to Vaughan Co., Inc. Composite bucket-hydraulic dredge. 3,774,323, Cl. 37-58.000.

VDO Tachometer Werke Adolf Schindling GmbH: *See—*
Henss, Heinrich; Maschke, Edgar; and Wirbel, Bernd, 3,774,457.

VEB Qualitats- und Edelstahl-Kombinat Hennigsdorf/Kr.: *See—*
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VEB Steremat "Hermann Schlimme": *See—*
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Veneziano, Joseph. Portable shaping tool. 3,774,425, Cl. 72-326.000.

Verch, Richard R.: *See—*
Prehmus, George F.; and Verch, Richard R., 3,775,551.

Verner, Dalton R., to Colt Industries Operating Corporation. Polarity reversal system for electrical discharge machining apparatus. 3,775,578, Cl. 219-69.00c.

Versar Inc.: *See—*
Tidman, Derek A., 3,775,638.

Vibrodyne, Inc.: *See—*
Isaacson, Max, 3,774,888.

Victor Company of Japan, Limited: *See—*
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Vidjak, Frank V., to Star-Kist Foods, Inc. Metering apparatus. 3,774,814, Cl. 222-220.000.

Vieane, Enrico L.: *See—*
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Vieri, Bruno J., to Xerox Corporation. Aperture designs for facsimile scanning apparatus. 3,775,559, Cl. 178-7.100.

Vigo, Mario; and Buehler, Fritz A., to Mobil Oil Corporation. Organic compositions containing salts of amines and substituted acetic acids as corrosion inhibitors. 3,775,320, Cl. 252-33.600.

Vincent, Andrew W. Large diameter photographic shutter. 3,774,518, Cl. 95-56.000.

Virsberg, Lars-Goran: *See—*
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Visser, Reier; Bormans, Jozef Marie Jacobus; Van Haaren, Wilhelmus Petrus Josephus; and Homan, Douwe Meindert, to Koninklijke Nederlandsche Hoogovens Staalfabrieken N.V. Substance for the refractory lining of pig iron troughs or the like. 3,775,140, Cl. 10-58.000.

Vliet, James H. Bottle cap closure. 3,774,797, Cl. 215-46.00a.

Vockenuber, Karl: *See—*
Krob, Erwin; and Valoh, Alfons, 3,775,000.

Vogel, Calvin, to GAF Corporation. Process for the preparation of organophosphonyl dichlorides. 3,775,470, Cl. 260-502.40r.

Vogel, Charles B., to Shell Oil Company. Method and apparatus for detecting fractures. 3,775,739, Cl. 340-18.00r.

Vogel, Karl, to Industriewerk Schauenstein. Knitting machine with weft insertion. 3,774,414, Cl. 66-84.00a.

Vogelgesang, Peter J.: *See—*
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Vogl, Otto F. Chloral copolymers. 3,775,371, Cl. 260-67.0tn.

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Vollans, Edgar Colin, to English Clays Lovering Pochin & Company, Limited. Heat treatment of particulate materials. 3,775,040, Cl. 432-15.000.

Volpin, Pavel Ilich: *See—*
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Vondra, Benedict L., Jr.; Haley, Thomas E.; and Burke, Daniel F., to Atlantic Richfield Company, mesne. Process for preparing a stable, homogeneous uranium dioxidezirconium dioxide binary sol. 3,775,338, Cl. 252-301.10s.

Voorhees, Maynard K., to Standard Manufacturing Company. Sand trap conditioning device. 3,774,695, Cl. 172-691.000.

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Voss, Donald R.: *See—*
Georgiana, Joseph M.; Rolls, James A.; Voss, Donald R.; Mierzwa, Anthony M.; and Paradis, Robert A., 3,775,359.

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Wacker-Chemie GmbH: *See—*
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Wada, Kenji: *See—*
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Wada, Masahiro: *See—*
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Wagu, Masakatsu: *See—*
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Wakamiya, Kinji; and Kobayashi, Isamu, to Sony Corporation. Method of selectively diffusing carrier killers into integrated circuits utilizing polycrystalline regions. 3,775,196, Cl. 148-175.000.

Wakonig, Freidrich: *See—*
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Walberg, Arvid C., to Walberg, Arvid C., & Co. Electrostatic deposition coating system. 3,774,844, Cl. 239-15.000.

Walberg, Arvid C., & Co.: *See—*
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Waldmann, Hermann: *See—*
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Wales, William; and McCallum, Alistair Robert, to Glacier Metal Company Limited, The. Method and apparatus for making bearings. 3,774,435, Cl. 72-331.000.

Walker, Eugene J.; and Flick, Robert H., to Westinghouse Electric Corporation. Circuit breaker with externally operable means for manual adjustment and manual tripping. 3,775,713, Cl. 335-176.000.

Walker, Laurence Richard; and Walstedt, Russell Erwin, to Bell Telephone Laboratories, Incorporated. Adiabatic magnetization cooling near absolute zero. 3,774,404, Cl. 62-3.000.

Walker, Peter S., to New York Society for the Relief of the Ruptured and Crippled. Knee-joint prosthesis. 3,774,244, Cl. 3-1.000.

Walker, Wilmer David, Jr. Waist mounted targets and tethered rolls. 3,774,910, Cl. 273-95.00a.

Wallace, George A.: *See—*
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Wallace, Kenneth A., to North Electric Company. Transistor inverter circuit for supplying constant current output. 3,775,702, Cl. 331-109.000.

Walsh, Myles Alexander: *See—*
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Walsh, Robert L. Transportation system. 3,774,542, Cl. 104-89.000.
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Wanner, William F., to Wanner Engineering, Inc. Diaphragm pump. 3,775,030, Cl. 417-388.000.
Ward, William A.: *See—*
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Ware, Franklyn O.; and Hill, Alan M., to Lawrence Paper Company. Corrugated paperboard adhesive. 3,775,145, Cl. 106-150.000.
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Washecheck, Paul H.; Portwood, Owen, Jr.; and Starks, Charles M., to Continental Oil Company. Process for purification of carboxylic acids. 3,775,450, Cl. 260-419.000.
Watamura, Donald; and Doester, Everett L., to Miller, Herman, Inc. Seat arranger. 3,774,962, Cl. 297-249.000.
Watanabe, Akinori: *See—*
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Watanabe, Masayasu, to Hokushin Electric Works, Ltd. Electromagnetic karmen vortex sensing flow meters. 3,775,673, Cl. 324-34.0fl.
Watanabe, Satoshi: *See—*
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Watkins, Charles H., to Universal Oil Products Company. Combination process for the conversion of hydrocarbonaceous black oil. 3,775,292, Cl. 208-86.000.
Watkins, Charles H., to Universal Oil Products Company. Desulfurization of asphaltene-containing hydrocarbonaceous black oils. 3,775,293, Cl. 208-86.000.
Watson, D. E.: *See—*
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Weber, Abraham; and Frossard, Jacques Jean, to Mead Johnson & Company. Octalone carboxylic acids and their derivatives. 3,775,430, Cl. 260-326.00c.
Weber, Ewald, to Werkzeugmaschinenfabrik Adolf Waldrich. Aligning device for workpieces on machine tool tables. 3,774,352, Cl. 51-238.000.
Weber, Urban A.; and Janu, George J., to Johnson Service Company. Diaphragm actuated spool valve. 3,774,637, Cl. 137-625.600.
Wedler, Frederick C., to Burlington Industries, Inc. Process for treating textile materials. 3,775,055, Cl. 8-155.100.
Wegerhoff, Arno; Schmitz, Franz-Josef; and Macura, Carl, to Glanzstoff AG. Acyl-amino-propyl-dialkylammonium dialkyl phosphates. 3,775,446, Cl. 260-403.000.
Wehling, Rolf: *See—*
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Wei, Peter H. L., to American Home Products Corporation. Hexahydro-9a-hydroxypyride [2,1-b] benzothiazolium halides. 3,775,421, Cl. 260-294.80b.
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Weidman, Verne Wesley, to Du Pont de Nemours, E. I., and Company. Hardened inorganic refractory fibrous compositions. 3,775,141, Cl. 106-65.000.
Weintraus, Murray; and Deurbrouci, Albert W., to United States of America, Interior. Separation of particulate solids of varying densities in a fluidized bed. 3,774,759, Cl. 209-474.000.
Weir, Donald Robert: *See—*
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Welch, Wilson A.; and Revell, Alan E., to American Air Filter Company, Inc. Mandrel assembly for air filter apparatus. 3,774,373, Cl. 55-354.000.
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Wells, Frank L., Company: *See—*
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Western Electric Company, Incorporated: *See—*
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Weston, Charles Douglas, to Martin Marietta Corporation. Oxidizing sulfur dyes on cellulose with sodium iodate or potassium iodate. 3,775,047, Cl. 8-37.000.
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Wikdahl, Anders Lennart. Process and apparatus for filtering cellulose fiber suspensions. 3,774,761, Cl. 210-81.000.

Wilbert, Godfrey; and Brown, Thomas. Pigmented polymeric artificial floral product substrate with imparted fragrance essential oil of long duration. 3,775,227, Cl. 161-30.000.

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Williams, Kenneth C.; and Cook, Shirl E., to Ethyl Corporation. Preparation of organolead-silicon compounds. 3,775,454, Cl. 260-437.00r.

Williams, Robert, to Sun Chemical Corporation. Sheet feeding apparatus for coating machines. 3,774,905, Cl. 271-49.000.

Willich, Jean Herbert; and De Baan, Johannes J., to Bilstein, August, Firma. Hydraulic impact absorber. 3,774,895, Cl. 267-136.000.

Willkins, Donald E. Prefabricated modular rough plumbing unit. 3,774,631, Cl. 137-357.000.

Willmroth, Gunter. System for pneumatic emptying of non-pressurizable containers filled with bulk material. 3,774,792, Cl. 214-310.000.

Wilson, Clyde R.: *See*—
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Wilson, Donald R.; and Morgan, William L., said Morgan assor. to said Wilson, Donald R. Orthopedic exerciser. 3,774,598, Cl. 128-52.000.

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Winkler, Charles L., to Westinghouse Electric Corporation. Speed pattern generator for elevator systems. 3,774,729, Cl. 187-29.00r.

Winn, Oliver H., to General Electric Company. Cap-reactor power groove ballast circuit. 3,775,720, Cl. 336-69.000.

Winn, Ray; and Ennis, Joseph C. Thermoluminescent radiation detector. 3,775,614, Cl. 250-337.000.

Winning, Guy. Rotational casting machine. 3,775,036, Cl. 425-174.400.

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Wisdom, Dorothea R. Continuous solvent recovery process. 3,775,053, Cl. 8-142.000.

Wise, Melvin. Electrical adapter for converting two-hole receptacle into three-hole receptacle with equipment ground. 3,775,727, Cl. 339-14.00r.

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Wohler, Wilson H., Jr. Rumen drenching device. 3,774,608, Cl. 128-223.000.

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Wolf, Manfred, to Klockner-Humboldt-Deutz Aktiengesellschaft. Grinding method and vibrating mill for performing this method. 3,774,855, Cl. 241-65.000.

Wolfe, James Richard, Jr., to Du Pont de Nemours, E. I., and Company. Segmented thermoplastic copolyesters. 3,775,373, Cl. 260-75.00r.

Wolfe, James Richard, Jr., to Du Pont de Nemours, E. I., and Company. Thermoplastic copolyetheresters based on 2,6-naphthalenedicarboxylic acid. 3,775,374, Cl. 260-75.000.

Wolfe, James Richard, Jr. Thermoplastic copolyetheresters based on 2,6-naphthalene-dicarboxylic acid. 3,775,375, Cl. 260-75.00r.

Wolff, Siegfried; Westlinning, Hermann; Schwarze, Werner; and Sroka, Werner, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for cross-linking of natural and synthetic rubber containing fillers. 3,775,366, Cl. 260-41.50r.

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Woods, Warren H. Jacket for phonograph records. 3,774,839, Cl. 229-68.00r.

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Yamamoto, Ryoichi; Ohoshima, Nobumasa; Sato, Hisanao; Kawarada, Hiroshi; and Yamazoe, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Method of making an electroluminescent material. 3,775,173, Cl. 117-201.000.

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Alo, Bruno F. D.: *See*—
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Barton, Kenneth R., R. R. Sanders, and W. C. Wooten, Jr. Method for preparing fire retardant polyester carpets. T916,006, 11–27–73, Cl. 117—137.

Biggio, Alessandro: *See*—
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Bond, Gary L.: *See*—
Rothwell, Allan R., and Bond. T916,008.

Bonner, Raymond E., to International Business Machines Corp. Two-mode egg monitoring system. T916,007, 11–27–73, Cl. 340—172.

Burnett, Glenna E.: *See*—
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Coney, Charles H. Coating compositions. T916,010, 11–27–73, Cl. 96—91.

Coney, Charles H., and G. E. Burnett. Printing process. T916,003, 11–27–73, Cl. 117—15.

Conner, Watson M., II, to International Business Machines Corp. Data tree structure and maintenance method. T916,004, 11–27–73, Cl. 444—1.

Dolen, Cecil W., and R. M. Elliott. Adhesive bond testing apparatus. T916,005, 11–27–73, Cl. 73—150.

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Grant, Peter M. Polyester coating composition. T916,011, 11–27–73, Cl. 260—16.

International Business Machines Corp.: *See*—
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Launikitis, Matthew B., and C. D. Marshall. Coating compositions. T916,002, 11–27–73, Cl. 260—831.

Marshall, Clifford D.: *See*—
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Rothwell, Allan R., and G. L. Bond. Method for preparing fire retardant polyester fibers. T916,008, 11–27–73, Cl. 8—17.

Sanders, Robert R.: *See*—
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Schwier, John R. Process for preparing polyester fabrics having desirable wetting and soil release properties. T916,001, 11–27–73, Cl. 8—115.

Siciari, Francesco, B. F. D. Alo, and A. Biggio, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Linear polyesters having a high affinity towards basic dyestuffs. T916,009, 11–27–73, Cl. 260—75.

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LIST OF REISSUE PATENTEES

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348 3,774,666
CLASS 161
2 3,774,674
4 3,775,226
30 3,775,227
55 3,775,228
56 3,775,230
57 3,775,231
62 3,775,232
3,775,233
68 3,775,234
70 3,775,235
116 3,775,236
3,775,237
123 3,775,238
149 3,775,240
250 3,775,239
CLASS 162
199 3,775,241
208 3,775,242
272 3,775,243
351 3,775,244
CLASS 164
52 3,774,667
255 3,774,668
278 3,774,669
279 3,774,670
282 3,774,671
344 3,774,672
CLASS 165
1 3,774,673
8 3,774,675
23 3,774,676
39 3,774,677
47 3,775,229
76 3,774,678
111 3,774,679
122 3,774,680
184 3,774,681
CLASS 166
260 3,774,682
293 3,774,683
303 3,774,684
314 3,774,685
CLASS 172
25.8 3,774,692
26.5 3,774,686
39 3,774,688
49 3,774,687
112 3,774,689
126 3,774,690
130 3,774,691
311 3,774,693
617 3,774,694
691 3,774,695
804 3,774,696
CLASS 173
20 3,774,697
43 3,774,698
48 3,774,699
119 3,774,700
CLASS 174
17LF Re.27,823
23C 3,775,548
25R 3,775,549
27 3,775,550
52R 3,775,551
105R 3,775,552
144 3,775,553
152R 3,775,547
CLASS 175
17 3,774,701
66 3,774,702
CLASS 176
19LD 3,775,245
30 3,775,246
36 3,775,247
65 3,775,248
78 3,775,249
87 3,775,250
3,775,251
CLASS 177
126 3,774,704
173 3,774,705
CLASS 178
5.4SD 3,775,557
5.4R 3,775,554
6.8 3,775,555
3,775,556
3,775,558
7.1 3,775,559
18 3,775,560
58R 3,775,561
CLASS 179
1.5R 3,775,562
2TV 3,775,563
18BC 3,775,564
18ES 3,775,565
3,775,566
100.2CA 3,775,567
100.2CH 3,775,570
100.2C 3,775,571
100.2R 3,775,568
100.2S 3,775,569
111R 3,775,572
175.23 3,775,573
CLASS 180
5R 3,774,706
6.48 3,774,707
9.5 3,774,708
54A 3,774,710
59WA 3,774,709
77R 3,774,711
82R 3,774,712
90 3,774,713
91 3,774,714
108 3,774,715
119 3,774,716
CLASS 181
.5NP 3,774,717
3,774,718
CLASS 182
63 3,774,719
91 3,774,720
CLASS 184
1D 3,774,721
105R 3,774,722
CLASS 186
1C 3,774,723
CLASS 187
8.62 3,774,724
8.71 3,774,725
9 3,774,726
3,774,727
29R 3,774,728
3,774,729
CLASS 188
1B 3,774,730
3,774,731
24 3,774,732
196D 3,774,733
296 3,774,734
3,774,735
CLASS 192
4A 3,774,736
56F 3,774,737
56R 3,774,738
84C 3,774,739
150 3,774,740
CLASS 193
10 3,774,741
CLASS 194
1 3,774,742
4C 3,774,743
CLASS 195
30 3,775,252
36R Re.27,815
63 3,775,253
66R 3,775,254
80 3,775,255
108 3,775,256
CLASS 197
6.7 3,774,744
17 3,774,745
CLASS 198
31AB Re.27,816
32 3,774,747
33AB 3,774,749
33 3,774,748
110 3,774,750
169 3,774,751
195 3,774,752
219 3,774,753
224 3,774,754
CLASS 200
38BA 3,775,574
61.71 3,775,575
157 3,775,576
648F 3,775,489
CLASS 202
234 3,775,257
CLASS 203
29 3,775,258
54 3,775,259
CLASS 204
14R 3,775,260
15 3,775,261
3,775,262
18R 3,775,263
28 3,775,264
33 3,775,265
38E 3,775,266
47 3,775,267
52R 3,775,268
58 3,775,269
60 3,775,270
71 3,775,271
98 3,775,272
115 3,775,273
146 3,775,274
162XN 3,775,275
163R 3,775,276
192 3,775,277
3,775,278
242 3,775,279
243M 3,775,280
244 3,775,281
266 3,775,282
268 3,775,283
290F 3,775,284
298 3,775,285
CLASS 206
56AB 3,774,756
56DF 3,774,755
62P 3,774,757
CLASS 208
10 3,775,286
17 3,775,287
25 3,775,295
33 3,775,288
45 3,775,289
50 3,775,290
57 3,775,291
86 3,775,292
3,775,293
89 3,775,294
108 3,775,296
111 3,775,297
3,775,298
120 3,775,299
139 3,775,300
3,775,301
157 3,775,302
210 3,775,303
3,775,304
3,775,305
263 3,775,306
CLASS 209
111.7 3,774,758
474 3,774,759
CLASS 210
14 3,775,307
23 3,775,308
31C 3,775,309
33 3,775,310
44 3,775,311
51 3,775,312
62 3,775,313
63 3,775,314
66 3,774,760
81 3,774,761
94 3,774,762
96 3,774,763
130 3,774,764
164 3,774,765
169 3,774,766
3,774,767
199 3,774,768
232 3,774,769
298 3,774,770
321 3,774,771
456 3,774,772
CLASS 211
60T 3,774,773
72 3,774,774
CLASS 213
15 3,774,775
100W 3,774,776
159 3,774,777
CLASS 214
1BT 3,774,778
1P 3,774,779
2.5 3,774,780
3 3,774,781
6D 3,774,782
7 3,774,783
16.1CE 3,774,784
17CA 3,774,785
35R 3,774,786
3,774,787
75H 3,774,788
77R 3,774,789
84 3,774,790
130 3,774,793
302 3,774,791
310 3,774,792
CLASS 215
9 3,774,794
39 3,774,795
41 3,774,796
46A 3,774,797
94 3,774,798
CLASS 219
10.49 3,775,577
69C 3,775,578
69E 3,775,580
85 3,775,579
121EM 3,775,581
121L 3,775,586
125PL 3,775,582
127 3,775,583
130 3,775,584
3,775,587
131R 3,775,585
243 3,775,588
284 3,775,589
366 3,775,590
501 3,775,591
CLASS 220
26R 3,774,799
31S 3,774,800
66 3,774,801
85R 3,774,802
85 3,774,803
90.2 3,774,804
CLASS 221
67 3,774,805
162 3,774,806
CLASS 222
3 3,774,807
57 3,774,808
137 3,774,809
146 3,774,810
190 3,774,811
211 3,774,812
3,774,813
220 3,774,814
334 3,774,817
357 3,774,815
368 3,774,818
391 3,774,816
3,774,819
400.7 3,774,820
405 3,774,821
541 3,774,822
CLASS 224
5S 3,774,823
6 3,774,824
25A 3,774,825
55 3,774,826
156 3,774,833
CLASS 226
50 3,774,827
66 3,774,828
97 3,774,829
107 3,774,830
194 3,774,831
CLASS 227
10 3,774,832
CLASS 228
3 3,774,834
CLASS 229
32 3,774,835
52AL 3,774,836
54R 3,774,837
62 3,774,838
68R 3,774,839
CLASS 233
14R 3,774,840
CLASS 235
1C 3,774,841
61.11E 3,775,594
61.6A 3,775,592
61.6H 3,775,595
61.8A 3,775,593
92MT 3,775,597
92C 3,775,596
150.22 3,775,599
151.3 3,775,600
153AC 3,775,598
156 3,775,601
3,775,602
185 3,775,603
CLASS 239
2S 3,774,842
14 3,774,843
15 3,774,844
78 3,774,845
102 3,774,846
124 3,774,847
191 3,774,848
338 3,774,849
542 3,774,850
551 3,774,851
CLASS 246
10F 3,775,604
25 3,775,605
41.35C 3,775,609
47 3,775,606
73R 3,775,607
90 3,775,608
CLASS 241
3 3,774,852
46.11 3,774,853
52 3,774,854
65 3,774,855
176 3,774,856
209 3,774,857
285R 3,774,858

CLASS 242
35.5R 3,774,859
36 3,774,860
55.19A 3,774,861
78.3 3,774,862

CLASS 243
29 3,774,863

CLASS 244
3.2 3,774,866
13 3,774,864
23C 3,774,865
40R 3,774,867
53R 3,774,868
83R 3,774,869
122B 3,774,870
136 3,774,871

CLASS 248
11 3,774,872
280 3,774,873

CLASS 249
59 3,774,874
178 3,774,875

CLASS 250
204 Re.27,817
205 3,775,617
209 3,775,618
303 3,775,615
305 3,775,610
310 3,775,611
337 3,775,614
347 3,775,619
353 3,775,620
381 3,775,616
497 3,775,612
525 3,775,613
531 3,775,621

CLASS 251
8 3,774,876
30 3,774,877
65 3,774,878
303 3,774,879
307 3,774,880
335 3,774,881
369 3,774,882

CLASS 252
.54 3,775,327
1 3,775,315
11 3,775,317
12 3,775,318
33.4 3,775,319
33.6 3,775,320
42.7 3,775,321
46.6 3,775,322
49.5 3,775,323
54.6 3,775,324
59 3,775,325
3,775,329
62.1 3,775,326
62.55 3,775,328
88.8 3,775,316
89 3,775,330
3,775,331
95 3,775,332
99 3,775,333
171 3,775,334
182 3,775,335
188.3CL 3,775,336
301.1R 3,775,337
301.1S 3,775,338
361 3,775,339
389A 3,775,340
426 3,775,341
430 3,775,342
439 3,775,343
444 3,775,344
453 3,775,345
463 3,775,346
518 3,775,347
524 3,775,348
547 3,775,349

CLASS 254
172 3,774,883

CLASS 256
32 3,774,884

CLASS 259
1R 3,774,885
4 3,774,886
8 3,774,887
72 3,774,888
108 3,774,889
185 3,774,890

CLASS 260
2.5AN 3,775,354
2.5AZ 3,775,350
2.5B 3,775,352
3,775,353
2.5L 3,775,351
17A 3,775,357
17R 3,775,356
21 3,775,358
23.7R 3,775,359
24 3,775,360
32.6NA 3,775,361
37AL 3,775,363
37EP 3,775,355
37N 3,775,362
41R 3,775,364
3,775,365
41.5R 3,775,366
45.9R 3,775,367
49 3,775,368
63R 3,775,369
67FP 3,775,370
67TN 3,775,371
67.2R 3,775,504
75R 3,775,373
3,775,375
77.5AC 3,775,376
77.5CR 3,775,377
78SC 3,775,379
78A 3,775,378
78.4D 3,775,381
3,775,384
78.4N 3,775,380
78.4R 3,775,382
3,775,383
79 3,775,385
80.3E 3,775,386
83.7 3,775,392
85.3H 3,775,387
86.3R 3,775,388
88.2R 3,775,389
92.3 3,775,390
92.8R 3,775,391
112 3,775,393
112.5 3,775,394
192 3,775,395
210R 3,775,396
211.5R 3,775,397
3,775,398
3,775,399
233.3R 3,775,400
239.55R 3,775,404
239.6 3,775,401
3,775,402
239.8 3,775,403
240G 3,775,405
3,775,406
240.1 3,775,407
243C 3,775,408
3,775,410
243R 3,775,409
248CS 3,775,411
256.4F 3,775,412
284 3,775,413
285 3,775,414
287R 3,775,415
288R 3,775,416
3,775,417
293.53 3,775,418
3,775,419
3,775,420
294.8B 3,775,421
294.9 3,775,422
295A 3,775,423
295B 3,775,424
306.8R 3,775,425
309.2 3,775,426
309.5 3,775,427
326C 3,775,430
326S 3,775,428
326.13A 3,775,429
326.5FL 3,775,431
327E 3,775,432
343.3 3,775,433
345.2 3,775,434
3,775,435
346.8 3,775,436
348C 3,775,437
348.5R 3,775,438
3,775,439
3,775,440
390 3,775,441
391 3,775,442
397.4 3,775,443
397.6 3,775,444
402 3,775,445
403 3,775,446
404.5 3,775,447
410.7 3,775,448
419 3,775,449
3,775,450
429R 3,775,452
3,775,453
429.7 3,775,451
437R 3,775,454
438.5R 3,775,455
448A 3,775,456
448.8R 3,775,457
456R 3,775,458
465D 3,775,459
3,775,460
465E Re.27,822
465.3 3,775,461
468D 3,775,462
471A 3,775,463
472 3,775,464
475SC 3,775,465
482B 3,775,466
483 3,775,467
487 3,775,468
497A 3,775,469
502.4R 3,775,470
514.5 3,775,471
524M 3,775,473
524R 3,775,472
530N 3,775,474
535P 3,775,475
544M 3,775,476
558A 3,775,477
564R 3,775,478
566A 3,775,479
584B 3,775,480
590 3,775,481
606.5P 3,775,482
609F 3,775,485
609R 3,775,483
3,775,484
613R 3,775,486
621H 3,775,487
640 3,775,488
650R 3,775,490
654D 3,775,491
666A 3,775,492
666.5 3,775,493
667 3,775,494
668A 3,775,499
668D 3,775,495
668F 3,775,496
3,775,497
3,775,498
3,775,500
669R 3,775,511
673 3,775,501
673.5 3,775,502
676R 3,775,503
3,775,505
677H 3,775,506
679A 3,775,507
680E 3,775,508
683D 3,775,509
683.41 3,775,510
851 3,775,512
864 3,775,513
876R 3,775,514
876 3,775,518
879 3,775,515
880R 3,775,516
940 3,775,517
984 3,775,519

CLASS 264
29 3,775,520
45 3,775,521
47 3,775,522
89 3,775,523
97 3,775,524
115 3,775,525
156 3,775,526
159 3,775,527
162 3,775,528
3,775,529
257 3,775,530
332 3,775,531

CLASS 265
75R 3,775,372
3,775,374

CLASS 266
21 3,774,891
24 3,774,892
35 3,774,893
3,774,894

CLASS 267
136 3,774,895
182 3,774,896

CLASS 269
34 3,774,897
45 3,774,898
95 3,774,900
315 3,774,899

CLASS 270
54 3,774,901
58 3,774,902
66 3,774,903

CLASS 271
11 3,774,904
49 3,774,905
64 3,774,906
80 3,774,907

CLASS 273
1R 3,774,908
63A 3,774,909
95A 3,774,910
95R 3,774,911
101 3,774,912
162D 3,774,913

CLASS 274
1A 3,774,914
4F 3,774,915
3,774,916
23R 3,774,917
38 3,774,918

CLASS 277
165 3,774,919
3,774,920

CLASS 279
2 3,774,921
22 3,774,928

CLASS 280
11.13R 3,774,923
11.28 3,774,924
11.35M 3,774,922
11.35T 3,774,925
13 3,774,926
41R 3,774,929
47.24 3,774,930
3,774,931
87R 3,774,932
96.1 3,774,933
104.5A 3,774,934
124F 3,774,935
150AB 3,774,936
3,774,938
150SB 3,774,937
179B 3,774,939
408 3,774,940
432 3,774,941
440 3,774,942
479R 3,774,943

CLASS 285
137R 3,774,944

CLASS 291
38 3,774,945

CLASS 292
64 3,774,946
68 3,774,947

CLASS 293
3,774,948
69R 3,774,952
69 3,774,949
84 3,774,950
88 3,774,951

CLASS 294
19R 3,774,953
70 3,774,954

CLASS 296
23MC 3,774,957
23C 3,774,955
23G 3,774,956
98 3,774,958
121 3,774,959

CLASS 297
239 3,774,960
249 3,774,962
260 3,774,961
338 3,774,963
366 3,774,964
417 3,774,965
440 3,774,966
445 3,774,967
452 3,774,968

CLASS 299
76 3,774,969

CLASS 301
41W 3,774,970

CLASS 302
15 3,774,971
29 3,774,972

CLASS 303
6C 3,774,973
6R 3,774,974
7 3,774,975
21F 3,774,976
21P 3,774,977
89 3,774,978

CLASS 305
24 3,774,979

CLASS 307
118 3,775,622
221C 3,775,623
293 3,775,624

CLASS 308
15 3,774,980
166 3,774,981
187.1 3,774,982
238 3,774,983

CLASS 310
19 3,775,625
67 3,775,626
70 3,775,627
208 3,775,628
235 3,775,629

CLASS 312
8 3,774,984
217 3,774,985

CLASS 313
82R 3,775,630
108A 3,775,631
109.5 3,775,632
217 3,775,633
318 3,775,634

CLASS 315
5.43 3,775,635
10 3,775,636
22 3,775,637
36 3,775,638
83 3,775,639
3,775,640
261 3,775,641

CLASS 317
61.5 3,775,642
101CC 3,775,644
101DH 3,775,643
234A 3,775,645
235R 3,775,646
249R 3,775,647
259 Re.27,824

CLASS 318
138 3,775,648
188 3,775,649
221H 3,775,650
227 3,775,651
3,775,652
326 3,775,653
599 3,775,654
634 3,775,655
649 3,775,656
696 3,775,657

CLASS 320
1 3,775,658
21 3,775,659
23 3,775,660
46 3,775,661

CLASS 321
5 3,775,662
9A 3,775,663
18 3,775,664
61 3,775,665

CLASS 322
28 3,775,666

CLASS 323
4 3,775,669
22T 3,775,667
122 3,775,668

CLASS 324
.5R 3,775,670
3,775,671
16R 3,775,672
34FL 3,775,673
43G 3,775,674
51 3,775,675
52 3,775,676
53 3,775,677
54 3,775,686
60C 3,775,678
3,775,687
61R 3,775,679
65P 3,775,680
78R 3,775,681
122 3,775,682
142 3,775,683
162 3,775,684

CLASS 325
42 3,775,685
3,775,688
363 3,775,689
455 3,775,690

CLASS 328
48 3,775,691
151 3,775,692

CLASS 330
35 3,775,693
56 3,775,694

CLASS 331
4 3,775,695
57 3,775,696
74 3,775,697
75 3,775,698
94.5 3,775,699
3,775,700
96 3,775,701
109 3,775,702

CLASS 333
11 3,775,703
3,775,704
14 3,775,705
22R 3,775,706
32 3,775,707
81A 3,775,708
98P 3,775,709

CLASS 335
61 3,775,710
153 3,775,712
176 3,775,713
230 3,775,714
3,775,715
253 3,775,716
278 3,775,718
295 3,775,717

CLASS 336
58 3,775,719
69 3,775,720
160 3,775,721
178 3,775,722

CLASS 337
245 3,775,723
3,775,724

CLASS 338
262 3,775,725

CLASS 339
14R 3,775,726
3,775,727
3,775,728
75P 3,775,729
116R 3,775,730
128 3,775,731
143R 3,775,732
198R 3,775,733

CLASS 340
3A 3,775,734
4R 3,775,735
5R 3,775,736
7R 3,775,737
3,775,738
15.5GC 3,775,749
18R 3,775,739
23 3,775,740
26 3,775,741
32 3,775,743
38L 3,775,742
44 3,775,744
57 3,775,745
146.1AL 3,775,746
146.1R 3,775,747
152R 3,775,748
171R 3,775,750
172.5 3,775,751
3,775,752
3,775,753
3,775,754
3,775,755
3,775,756
173LS 3,775,757
174VA 3,775,758
174.1H 3,775,759
228R 3,775,761
3,775,762
236 3,775,763
324A 3,775,760
324R 3,775,764

CLASS 343
5LS 3,775,766
5R 3,775,765
6.5R 3,775,767
7.7 3,775,768
100CL 3,775,770
100SA 3,775,769
719 3,775,772
770 3,775,771
781 3,775,773

CLASS 350
3.5 3,774,986
96WG 3,774,987
150 3,774,988
160LC 3,774,989
181 3,774,990
215 3,774,991
236 3,774,992
243 3,774,993
252 3,774,994
294 3,774,995
302 3,774,996
314 3,774,997

CLASS 351
51 3,774,998

CLASS 352
12 3,774,999
79 3,775,000
141 3,775,001
216 3,775,002

CLASS 353
23 3,775,003
39 3,775,004
42 3,775,005

CLASS 355
4 3,775,006
8 3,775,007
18 3,775,008
83 3,775,009
100 3,775,711

CLASS 356
101 3,775,010
172 3,775,011
3,775,012
208 3,775,013

CLASS 401
8 3,775,014
190 3,775,015
263 3,775,016
266 3,775,017

CLASS 404
93 3,775,018
133 3,775,019

CLASS 408
115 3,775,020

234	3,775,021	214	3,775,027	253	3,775,533	341	3,775,540	CLASS 426		175	3,775,038
CLASS 415		267	3,775,028	310	3,775,534	346	3,775,541	46	3,775,542	350	3,775,039
61	3,775,022	353	3,775,029	447	3,775,535	CLASS 425		281	3,775,134	CLASS 432	
199R	3,775,023	388	3,775,030	CLASS 424		78	3,775,032	364	3,775,132		
211	3,775,024	CLASS 418		1	3,775,536	109	3,775,033	371	3,775,543	15	3,775,040
CLASS 417		61	3,775,031	21	3,775,537	128	3,775,034	CLASS 431		27	3,775,041
7	3,775,025	CLASS 423		65	3,775,538	141	3,775,035			80	3,775,042
36	3,775,026	242	3,775,532	243	3,775,539	174.4	3,775,036	144	3,775,037	205	3,775,043

CLASSIFICATION OF DESIGNS

D02—	233	229,375	D08—	21	229,388		R	229,401			229,412		H	229,425	D52—	6R	229,440
D04—	18	229,376		61	229,389	D14—	3E	229,402			229,415	D29—	23B	229,429	D55—	1B	229,441
D06—	28	229,378		85	229,390		J	229,403			229,416		E	229,428	D56—	4D	229,443
	29	229,377		98	229,391	D16—	2C	229,404			229,417	D34—	5GH	229,431		R	229,442
	76	229,379		233	229,392	D22—	19	229,405	D25—	1R	229,418			229,434	D57—	1E	229,444
	79	229,380		261	229,393		31	229,406			229,419		VV	229,430			229,445
		229,381	D09—	12	229,394	D23—	19	229,407			229,420		K	229,432	D74—	17B	229,446
	176	229,382		210	229,395			229,413	D26—	5C	229,421	D40—	1A	229,435	D81—	10	229,448
	186	229,383		255	229,396			229,414		13	229,422		D	229,433	D86—	E	229,447
	191	229,384	D11—	1R	229,397		43	229,408		14A	229,423	D42—	B	229,436	D92—	1Y	229,449
	238	229,385	D12—	145	229,399			229,409			229,424		7H	229,437	D94—	3	229,450
	242	229,386		158	229,398			229,410			229,426			229,438	D96—	2	229,452
D07—	61	229,387	D13—	1H	229,400			229,411		B	229,427			229,439		12	229,451

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,774,282	3,774,603	3,775,307	3,774,250	3,775,461	3,774,571
3,774,468	3,774,613	3,775,311	3,774,251	3,775,476	3,774,643
3,775,279	3,774,614	3,775,314	3,774,302	3,775,490	3,774,646
3,775,534	3,774,633	3,775,322	3,774,326	11 : 3,774,542	3,774,647
3,775,553	3,774,642	3,775,351	3,774,330	12 : 3,774,422	3,774,657
2 : 3,774,384	3,774,659	3,775,352	3,774,355	3,774,450	3,774,676
4 : 3,774,347	3,774,660	3,775,359	3,774,359	3,774,551	3,774,707
3,774,648	3,774,664	3,775,471	3,774,397	3,774,580	3,774,708
3,775,120	3,774,679	3,775,475	3,774,482	3,774,631	3,774,728
3,775,202	3,774,716	3,775,485	3,774,495	3,774,706	3,774,763
3,775,745	3,774,717	3,775,488	3,774,500	3,774,720	3,774,773
5 : 3,774,806	3,774,718	3,775,505	3,774,541	3,774,848	3,774,775
6 : 3,774,240	3,774,724	3,775,519	3,774,594	3,774,871	3,774,797
3,774,241	3,774,746	3,775,540	3,774,605	3,774,878	3,774,799
3,774,249	3,774,767	3,775,541	3,774,645	3,774,899	3,774,801
3,774,278	3,774,771	3,775,558	3,774,769	3,774,938	3,774,804
3,774,279	3,774,772	3,775,570	3,774,809	3,774,944	3,774,823
3,774,286	3,774,778	3,775,582	3,774,819	3,775,214	3,774,827
3,774,294	3,774,784	3,775,597	3,775,020	3,775,240	3,774,833
3,774,297	3,774,796	3,775,602	3,775,139	3,775,586	3,774,838
3,774,303	3,774,802	3,775,620	3,775,157	13 : 3,774,267	3,774,844
3,774,305	3,774,810	3,775,621	3,775,185	3,774,298	3,774,861
3,774,314	3,774,814	3,775,643	3,775,216	3,774,577	3,774,884
3,774,331	3,774,825	3,775,648	3,775,272	3,774,669	3,774,897
3,774,341	3,774,850	3,775,655	3,775,285	3,774,910	3,774,901
3,774,345	3,774,866	3,775,658	3,775,336	3,775,137	3,774,912
3,774,358	3,774,870	3,775,659	3,775,432	3,775,233	3,774,947
3,774,390	3,774,875	3,775,669	3,775,458	3,775,256	3,774,969
3,774,402	3,774,876	3,775,671	3,775,562	14 : 3,774,389	3,775,024
3,774,405	3,774,903	3,775,682	3,775,617	17 : 3,774,243	3,775,111
3,774,421	3,774,914	3,775,683	3,775,752	3,774,285	3,775,292
3,774,428	3,774,952	3,775,700	10 : Re.27,818	3,774,293	3,775,293
3,774,430	3,774,990	3,775,735	3,774,239	3,774,309	3,775,300
3,774,440	3,774,993	3,775,742	3,774,490	3,774,340	3,775,301
3,774,443	3,775,005	3,775,750	3,775,051	3,774,348	3,775,321
3,774,492	3,775,010	3,775,755	3,775,141	3,774,374	3,775,326
3,774,524	3,775,013	3,775,770	3,775,171	3,774,420	3,775,393
3,774,531	3,775,041	3,775,771	3,775,182	3,774,423	3,775,472
3,774,537	3,775,053	3,775,772	3,775,347	3,774,459	3,775,481
3,774,540	3,775,072	3,775,773	3,775,361	3,774,464	3,775,486
3,774,559	3,775,133	8 : 3,774,291	3,775,371	3,774,472	3,775,542
3,774,562	3,775,142	3,774,318	3,775,373	3,774,473	3,775,548
3,774,573	3,775,147	3,774,335	3,775,374	3,774,485	3,775,569
3,774,578	3,775,153	3,774,437	3,775,375	3,774,489	3,775,573
3,774,590	3,775,197	3,774,690	3,775,386	3,774,494	3,775,581
3,774,591	3,775,204	3,774,824	3,775,388	3,774,532	3,775,584
3,774,592	3,775,219	3,775,290	3,775,390	3,774,536	3,775,590
3,774,595	3,775,220	3,775,294	3,775,438	3,774,543	3,775,606
3,774,596	3,775,238	3,775,759	3,775,439	3,774,554	3,775,691
3,774,598	3,775,259	9 : Re.27,823	3,775,440	3,774,560	3,775,733
3,774,602	3,775,274	Re.27,824	3,775,455	3,774,568	18 : Re.27,815

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DESIGN PATENTS

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Frederick B. Dent, *Secretary*